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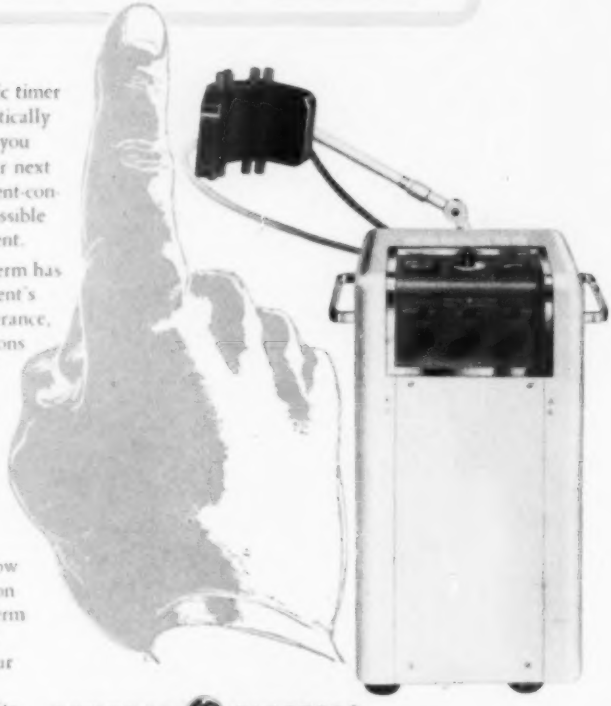

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EDITOR OF THE MONTH

ARTHUR L. WATKINS, M.D.
Boston, Massachusetts

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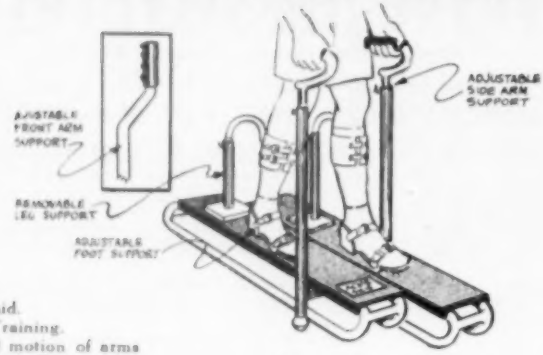

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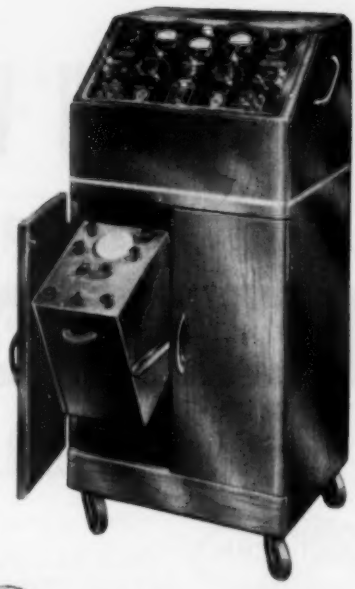

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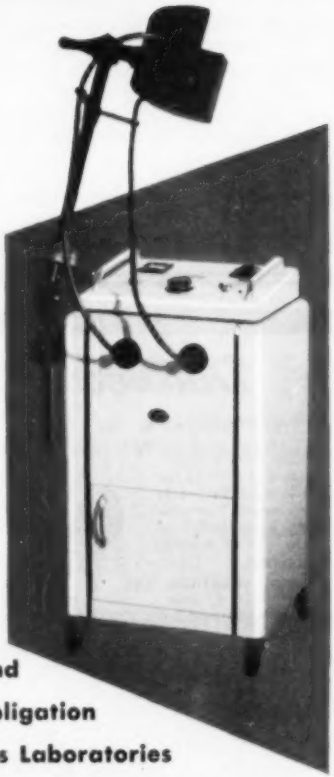

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HOW OCCUPATIONAL THERAPY HELPS IN PSYCHIATRY *

WINFRED OVERHOLSER, M.D., Sc.D.

Superintendent, Saint Elizabeths Hospital

and

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WASHINGTON, D. C.

Before anyone can adequately attempt to treat the mentally disturbed he must have a deep understanding of what really has happened to these people. The diagnosis and the symptoms, or modes of expression of the illness, are not what is important. The therapist must have some understanding of the chaotic emotions that are creating these symptoms, for the symptoms are merely an attempt on the part of the patient to establish some sort of equilibrium. The therapist needs to know how these people are different from those we term healthy. She must feel compassion and respect for her patients and must be able to identify with them to some extent — to the point at least, of being able to imagine how they feel.

The emotionally and mentally disturbed reactions which are seen in mentally ill people are different in degree, and not in kind, from the emotional and mental experiences and modes of expression which are seen in healthy persons. All of us have felt anxious, insecure, depressed and hostile at times, and we have shown it in a variety of ways — anger, withdrawal, boasting, sugar sweetness or negativism. The mentally disturbed person's self-esteem is merely a good deal lower than ours, and the emotional experiences and modes of expression are intensified. Unfortunately, if a person has low self-esteem he will also have low esteem of others and fear of low appreciation by other people.[1]

The symptoms which we see in the mentally disturbed not only are an expression of an emotional disturbance but also are the patient's attempt toward adjustment. The schizophrenic patient shows withdrawal to protect himself from additional fear. The symptom, no matter what it may be, prevents more anxiety.[2]

The mentally disturbed can be effectively treated, but it requires special skill, knowledge and understanding on the part of each person who deals with these individuals. Occupational therapy in psychiatry, as all of the other types of treatment used in the field, is primarily concerned with interpersonal relationships, that is, the processes that go on between people. As Fromm-Reichmann has stated, the goals of treatment for the psychiatric patient are the development of growth, the inner independence of the patient, potential freedom from fear and anxiety, capacity for self-realization and for forming durable relationships with others and of giving and accepting mature love.[3]

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* Read at the Twenty-Eighth Annual Session of the American Congress of Physical Medicine, Boston, Aug. 30, 1950.

1. Mullahy, Patrick: "Remarks on the Philosophy of Mental Illness," A Study of Interpersonal Relations, 1st ed., New York, Hermitage Press, 1949, pp. 164-169.

2. Mullahy,1 pp. 166-168.

3. Fromm-Reichmann, Frieda: Notes on the Personal and Professional Requirements of a Psychotherapist, Psychiatry **12**:375, 1949.

For many mentally disturbed people the very act of coming into the hospital is treatment of a sort. All responsibility is removed from the individual. He need not even be responsible for intake of food or elimination, and responsibility is slowly returned to the individual as he indicates he is able to assume it. The personnel have compassion for the patient; they understand him, and they make few demands upon him.

For many other people coming to the hospital is considered a punishment, or just one great terrifying ordeal. There are tremendous adjustments that the individual must make. The very appearance of most psychiatric hospitals is foreboding; the buildings usually appear dungeon-like and are large and lonely looking. The patient is held against his will behind barred windows and locked doors. He must eat, sleep and dress according to a schedule set by other people. He seldom has an opportunity to go outdoors and walk around the grounds, much less go off the grounds. The wards are usually barren and sterile looking. The nurses and attendants are starched, efficient and distant appearing to a newcomer. In our large population hospitals the doctors are far too busy to stop and chat with each patient as they make rounds. Because of this they, too, often seem formal and disinterested to the patient. The mentally disturbed person was anxious and insecure before he came to the hospital, and this anxiety and insecurity are greatly increased by the unfamiliarity of the situation, and by the patient's ignorance of hospital procedure and his ignorance of what is happening to him emotionally. His anxiety is increased even more by the knowledge that he is so sick that society has felt it necessary to "put him away." His length of stay at the hospital and the reception society will give him when he does leave are of profound concern to him. The average layman is still in almost total ignorance of the dynamics of mental illness and quite intolerant in his acceptance of an individual who has been in a mental institution. Our patients realize this.

For most mentally disturbed people the past has been frightening and disappointing, the present is intolerable and the future is one anxious void. The patient has been denied love, affection, security and praise and now personal freedom — all his rightful due. In his anxiety the patient feels he is alone — no other person possibly can have had his feelings of despair and insecurity. He is an isolated person and he believes himself peculiarly different. The feeling of isolation was with the person for a long time before he reached the hospital, but here it is intensified. In his hurt and his dissatisfaction with his life he runs away from himself, away from reality. In his isolation he acts as a unit and it is almost impossible for him to act as part of a group.

Psychiatric occupational therapy is a real challenge to any occupational therapist. It is a challenge which too few therapists are capable of accepting. The personality of the therapist is of prime importance. Her most important function is interacting with her patients and assisting them to interact with a degree of wholesomeness with one another. She is in a better position than most of the other professional workers in the hospital to get the patient to relate closely to her. The emotional bond which grows between the therapist and the patient is a far greater force compelling the patient to health than any activity which she chooses for the patient. The therapist must be aware of her own personality needs. She must have enough satisfaction and security in her own nonprofessional life to forego the temptation to use the patient to fulfil her own needs. All this requires that the therapist be a well adjusted, secure person. Patients are most sensitive to

the attempts of others to hide their insecurity, and the therapist's insecurity adds to that of the patient's.[4] We see this particularly well demonstrated with our patients in our shops when they bypass our inexperienced, insecure student therapists and go to the graduate therapist. The therapist must be sufficiently secure to deal with patients' hostility, ridicule and advances without becoming uncomfortable and reverting to the use of some form of punishment.

The therapist must remember that the patient's present relationships are patterned by early relationships with the significant people in his environment in his infancy and childhood. The distortions the therapist sees in the patient's present interpersonal relationships were conditioned by the patient's previous interpersonal experiences.[5] If the therapist remembers this, the relationship which she has with the patient will take on added significance.

The therapist must have special sensitiveness, alertness and consideration for the suffering of the mentally disturbed to be able to understand them.[6]

If the therapist is understanding and accepting — which means she must have freedom from convention and prejudice — and is able to create a secure atmosphere for the patient, the patient frequently will reveal much to the therapist that he has been unable to reveal to others.

It is imperative that the therapist be frank, honest and sincere. If she does not understand the patient or hear the patient clearly she should indicate this and let the patient reiterate. It is impossible for us to understand much of the communications of some mentally disturbed, but they are meaningful and potentially understandable.[7] If the therapist does not agree with a patient, she should make it clear that she does not, doing this in such a way that she will not upset the patient or make him feel more insecure. The therapist should comment on the patient's errors in his work in a matter of fact way.

A therapist can modify her own attitude toward a patient only within a certain limited area. If a therapist feels revulsion when she has contact with a patient, no amount of covering up is going to really conceal from that patient the feeling she has. Patients are supersensitive, most particularly the schizophrenics. They have spent most of their lives protecting themselves from others, and they are only too quick to recognize hostility or disapproval directed at them.

To be really effective in her interpersonal relationships with patients, a therapist needs some counseling from a staff psychiatrist or someone else who is qualified, with particular reference to the variety of difficulties that will arise between herself and certain patients. Difficulties cannot help arising, and it will be most helpful to the therapist and to the patient if she can understand what her role in these difficulties has been. Students, even more than the graduate therapists, will need wise counseling.

As we have already indicated, the hospital is not a normal environment. Few of its activities or its procedures would be found in the daily life of a healthy individual. A patient cannot be expected to organize normal responses in an environment which is almost totally abnormal. The patient lives with other people and that is normal, although the way in which they live is not normal. There are authoritarian figures and that is normal, but the atmosphere and the activities are abnormal, with only several exceptions.

4. Fromm-Reichmann,2 pp. 263-266.
5. Fromm-Reichmann,2 p. 262.
6. Mullaby,1 p. 184.
7. Mullaby,1 p. 186.

The church services are quite normal, for those who attend, and the activities that the occupational therapists carry on are normal. Craft and recreational activities and the industrial activities are reasonable facsimiles of work and play activities in which the healthy person indulges.

Those therapists who have shops, by the appearance of the shop and by their understanding, accepting attitude, can create a more normal atmosphere than can be achieved elsewhere in the hospital. This is one of the most important functions of the occupational therapist.

The therapist has certain goals which are universal for all her patients. She reaches these goals through the activities she presents and the interaction of personalities that she helps to foster. To do this she sets up minor goals for her patients to reach on the ladder to the universal or major goals. It will be almost always necessary for the therapist to set the goal for a sick patient, that is, to choose the activity or project and set it up in a certain situation. As patients improve, it will be found that most of them can set their own goals or should be assisted in doing so. Before the therapist establishes her minor goals, she must size up the patient's assets and liabilities. She will aim to minimize the liabilities and develop the assets.

The achievements that the therapist expects of the patient must be within the patient's present capacity and must always be at the patient's highest level of efficiency. It is unnecessary to say that the work must be serious or creative and purposeful in nature.

The occupational therapist should be mainly concerned with the interaction of her patients with others. We have discussed the isolation of the mentally disturbed, and the therapist can reduce this first by building the self-esteem and self-confidence of the patient through the relationship with herself and through the activity. Later she may reduce the isolation further by having the patient work with a group and in a group activity. By building the patient's self-esteem and by giving him support she will assist the patient to stop his "mad" flight and face what is happening to him. Actually, all the other goals of the therapist stem from this one of helping the patient form meaningful, healthy interpersonal relationships.

The therapist can do much, particularly with the acutely ill patient, in helping to influence the formation of right attitudes toward his illness, toward hospital regulations and toward the personnel.

The activities that occupational therapists use, being reality, provide a powerful aid in keeping the patient in touch with his surroundings. The tasks provided demand some of the attention usually given to phantasy and introspection. Reality must be made as attractive and secure for the patient as possible so that he will be able to accept it. The therapist can assist in this by presenting an attractive task in a secure and normal atmosphere. Acceptance of reality usually comes very slowly and is usually fragmentary.

The therapist can help the inaccessible, withdrawn patient to give release to his feelings and frequently give clues to his emotional conflict by presenting him with creative work.

She can help the patient to sublimate hostility, aggression and guilt by a careful choice of activities. This will be particularly needed as the patient returns to health and the old responsibilities again become apparent.

Occupational therapy can play an important role in the recovery of the mentally disturbed if the therapist has understanding and compassion for the mentally disturbed, if she is well adjusted and understands her own needs and the ways in which she fulfils them and if she realizes that meaningful interpersonal relationships are the basis and the goal of her treatment.

FAILURES IN FUNCTIONAL OCCUPATIONAL THERAPY *

SEDGWICK MEAD, M.D.

and

ALEX HARELL, M.D.

ST. LOUIS

The title of this paper is meant to attract attention, to invite reflection and, if necessary, to stimulate controversy. We have been observing the results of occupational therapy programs in several civilian, military and veterans centers since 1943. We have been gathering impressions and reactions from many patients who have been through an entire rehabilitation program, including intensive occupational therapy. One of us (A. H.) put himself in the position of an occupational therapy patient and underwent a two weeks' course of treatment. This paper has been prompted by the large number of unfavorable reactions encountered in our study. Something is wrong with functional occupational therapy as it is at present practiced. (We wish to make clear that we are not speaking here of diversional therapy or of occupational therapy as it is sometimes practiced in specialized hospitals, such as neuropsychiatric and tuberculosis sanatoriums.)

It is conventional to explain the slow acceptance of occupational therapy as the result of the indifference of the average physician and his lack of instruction while in medical school. While certainly true, this reasoning does not wholly explain why both the physician and the patient refuse to take occupational therapy seriously. In the following discussion we undertake to analyze the problem more fundamentally.

The Problem of Financing Occupational Therapy

The question of financing occupational therapy is the first to interest the hospital administrator. It has never been realistically faced. At present the patient usually pays unknowingly, by a species of hidden taxation designed to soften the blow to the consumer by making him unaware that he is paying. Even worse, the cost of treating the few is often distributed over the many by schemes such as community chest drives. No consumer ever believes in the value of a commodity for which he does not directly pay.

Lack of Respect for the Therapist as a Craftsman

Patients regard the occupational therapist as a jack-of-all-trades and master of none. If the patient is a former tool and die maker, he will instantly comprehend the therapist's lack of background and experience in machine shop and will tend to distrust her competence in all other respects. We do not believe that an occupational therapist should ever attempt to instruct a patient in a craft in which she herself cannot turn out a finished article of professional excellence.

It ought to be mentioned at this point that the vocational significance of functional occupation therapy has been overemphasized, even when qualified by the diminutive prefix as "prevocational." Vocational counseling is a discipline requiring among other things an advanced degree in psychology, spe-

* From the Division of Physical Medicine, Washington University School of Medicine.

* Read at the Twenty-Eighth Annual Session of the American Congress of Physical Medicine, Boston, Aug. 30, 1950.

cial skill in testing procedures and an intimate experience in a variety of industries and work conditions totally unfamiliar to the newly graduated occupational therapist.[1] Vocational counseling is decidedly a full time career in itself.

The Unfavorable First Impression Created by Excessively Feminine Pursuits and by Recreational Activities

Most occupational therapy shops are fluttery, littered places oversupplied with looms. Such an environment is hardly calculated to reassure the patient with subconscious doubts about his own masculinity. On closer analysis it develops that no particular activity is basically sissy or unmanly — nothing is more business-like than a skilled weaver plying his loom — what is so damaging is the appearance of an atelier with no visible product.

Recreational activities complete the picture — for both doctor and patient — of an enterprise not to be taken seriously. In one corner some one is picking inexpertly and irritatingly at a battered piano. On the unattended television set a patient demonstrator gives a cooking lesson to a nonexistent audience. Dart throwers and shuffleboard players, instead of exercising their stiff shoulders, are improvising an Indian headdress.

No discipline can inhere in such a setting; people will not work while at play. This is not to decry the importance of play. It has excellent socialization values, but we think that its functional value has been overemphasized. There is a peculiar emptiness and joylessness about drinking orange juice or running a quarter mile, not because you like it, but because you are told it is good for you. Except in psychiatric hospitals, recreation should be a function of special services, the Gray Ladies or the chaplaincy.

The Conflict Between Patient and Therapist Over Choice of Activity

The occupational therapist is justifiably irritated when a physician sends a patient to the shop (usually after some wheedling by the patient) with a note instructing the therapist to allow the patient to make some article such as a lamp or cigaret case. The therapist feels that unless she can exercise her personal judgment in patient guidance and assignment, her role is reduced to that of attendant in a hobby shop. The patient is equally determined to indulge his own interests and will have nothing to do with a selection of functional value. Why is it that a patient will work uncomplainingly and willingly at a monotonous and uninteresting physical therapy procedure yet frequently balk at a craft that has the same functional objective? This is not only puzzling; it seems to be one of the major reasons for the comparative failure of occupational therapy of the functional type.

Another source of disagreement between patient and therapist concerns the value of the activity versus the completion of a task. Some therapists we have known are almost violently opposed to completing a project, feeling that as soon as the patient shows real proficiency he should be transferred to a new enterprise. But the patient stubbornly insists on finishing the article, perhaps from pride of achievement, perhaps from mercenary motives.

On the basis of our observations and studies, we have concluded that it may be not only useless but perhaps even detrimental for the therapist to

1. Professional Standards for Vocational Guidance and Educational Counseling Service: A Report of the Committee on Professional Standards of the Occupational Adjustment Division, Social Planning Council of St. Louis and St. Louis County, Missouri, June, 1949.

insist that the patient appreciate basic values of functional occupational therapy and that he act on those values. Though we grant that the patient's attitude toward the purpose and end result of the activities may be short-sighted, we feel that the therapist should accept the situation philosophically.

Occupational therapists disagree among themselves concerning the propriety of participation in hospital utilities such as furniture repair or the manufacture and sale of small articles. One group argues that there is no place for individualization of treatment in a stereotyped production line of toy wooden trains or the like. And yet workshops featuring production of this kind are among the most effective and successful that we have visited.

The Relative Ineffectiveness of Functional Occupational Therapy

We agree with Cranfield[2] that functional occupational therapy, especially for large joints and muscles, is largely ineffectual. We have already mentioned difficulties in patient acceptance. Lack of success also derives, we feel, not from any lack of understanding by the therapist of basic anatomy and kinesiology but from difficulty in increasing work resistance methodically and from lack of attention span on the part of the patient. The technics of occupational therapy are much better suited to gains in endurance and work tolerance, coordination and manual dexterity than to increases in strength and joint range. In cases of disabled wrists and fingers, however, notable strength and joint range progress has been achieved through occupational therapy technics. In addition to these there are possible important by-products in recovery of self-confidence and improved interpersonal relationships which depend not at all on the kind of activity employed.

One school of functional occupational therapy held that no power tools should ever be employed in the shop. A return to primitivism was encouraged, on the grounds that treadle-powered machines and crude ox cart type mechanisms conferred work benefits denied the push button type of operator. This nonsense can be dispelled by one morning's work in any kind of well run shop or even by juicing oranges in one's kitchen with a power juicer. The temper of modern man is to be rightly out of patience with any spurious return to nature. There would be a distinct gain for every one concerned except the manufacturer if all the bicycle jigsaws in existence were collectively junked. Bicycling is a fine exercise for limited objectives and is preferably carried out on a country road.

If the occupational therapist feels that her function in the care of the sick and disabled is too sharply curtailed by the strictures listed above, we should like to take this opportunity to mention some activities now seldom carried out in centers with which we are familiar which would add materially to the therapist's usefulness. It is important in physical medicine to use yardsticks such as muscle strength and joint range in order to chart progress or its lack. This is a duty which the occupational therapist can share with the physical therapist and the physician. In addition, she can keep a score sheet on each patient on self care and daily living activities. With her training in the working of leather and plastics she is ideally suited to the manufacture of splints[3] for pain relief, support and functional activities of certain patients, such as eating and writing supports for quadriplegics.

2. Cranfield, H. V.: Some Limitations in the Use of Occupational Therapy, Occup. Therapy & Rehab. 26:208, 1947.
3. Schulz, B. F.: Celastic Splints, Phys. Therapy Rev. 29:543, 1949.

Summary and Conclusions

We present an analysis of failures in functional occupational therapy. These concern mainly the following problems: Of primary concern to the physician as well as to patient and therapist are —

1. The financing of occupational therapy.
2. The relative ineffectiveness of functional occupational therapy.

Of primary concern to the patient and therapist are —

3. Lack of respect for the therapist as a craftsman.
4. The poor salesmanship of cluttered, feminine pursuits and recreational taint.
5. The conflict between patient and therapist over choice of work and its completion.

We feel that functional occupational therapy can be improved by —

1. Resolutely charging the patient on a cost-accounting basis.
2. Allowing the patient's choice of craft or activity to prevail — within limits — over the functional objective.
3. Working primarily for endurance, coordination, and manual skill.
4. Supplying yardsticks of improvement, such as goniometrics and score sheets for self care.
5. Supplying plastic splints, supports and other aids not readily supplied by bracemakers and other agencies.
6. Sharply concentrating personnel and space to the necessary minimum and activities to those in which the therapists are highly proficient.

OCCUPATIONAL THERAPY IN A GENERAL AND SURGICAL HOSPITAL *

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Occupational therapy, like Topsy, was not born. It just grew and lived the life of an orphan within the medical profession for a quarter of a century without the benefit of direct medical supervision. During the last war, it was formally adopted by physical medicine, and the usual questions regarding the orphan's background and future possibilities are in order.

For the past 25 years occupational therapy in the average general medical and surgical hospital has stressed diversional and certain types of functional activities. Diversional therapy with supervised recreational activities is conducted in the general wards, private rooms, pediatric and psychiatric sections and the occupational therapy workshop.

Diversional occupational therapy has played a very important part in the general hospital program. Its purpose is to provide constructional and recreational activity under medical supervision, so that the mind may be divorced from thoughts of illness and invalidism to constructive utilization of leisure time.

Diversional therapy aids the patient in overcoming his first and biggest problem — adjustment to hospitalization. Often the occupational therapist is the only staff member who has the time to stop and visit with a patient. In so doing she is able to alleviate worries of home and family conditions and to divert the patient's mind from himself by presenting acceptable activities and interest. By approaching a patient as soon as possible and giving him something constructive to do, the occupational therapist is able to keep the patient mentally alert and also help him to retain his contact with the world outside. By maintaining good physical and mental habits while in the hospital the patient will be more able to readjust to his normal environment.

Socialization is another important problem of which a therapist must be aware. A person who is confined to bed, either in a private room or in a ward, may withdraw within himself and become a socially malajusted patient. Or if he does converse, his only topics may be his illness, the inefficiency of the hospital staff and his family worries. By stopping and talking to the patient each day, the therapist may give him a feeling of importance, and through diversional therapy she may improve relationship between patients and encourage a healthier attitude. Diversional activity may be of educational value, especially in the children's ward, where the therapist can coordinate her activities with the schooling of the child.

It may also be possible to give the patient some knowledge of a craft or hobby collection which he can take home with him. His leisure time at home may then be directed to profitable and worth while channels.

Diversional therapy aids in building up and maintaining the morale of various types of patients — preoperative patients, patients with disabilities and long time patients who need encouragement and help in adjusting to

* Read at the Twenty-Eighth Annual Session of the American Congress of Physical Medicine, Boston, Aug. 30, 1950.

their limitations. Diversional activity, besides diverting the mind, may give a feeling of usefulness and worthwhileness.

The second aspect of occupational therapy is concerned with the physiological functions. Functional occupational therapy is a program of graded activity employed to restore articular and muscular function, to improve the general condition, to build up strength and physical endurance and to aid in mental rehabilitation. In my opinion, occupational therapy has not kept up with the latest advances in functional therapy. The loom, the lathe, wood working and metal working tools have been and still are the standard equipment in most hospital occupational therapy workshops. As therapy today is geared toward functional activities to restore usefulness, it should not be fixed but should be in a constant state of change, ready to absorb new forms or modifications of old to suit the ever new set of conditions.

As early as 1937, Dr. Storms, of Toronto, protested the easy-going methods of occupational therapy in functional work, when he wrote:

> The craft work must by the end of the treatment require as much muscular effort as the man will need to put forth to do this work when he stops treatment. The mere fact that we have trained a man by occupational therapy to use a small coppersmith's hammer, or do a light finger exercise all day long does not by any means mean that he will be able to swing a sledge hammer or use a Stillson wrench for even five minutes, though this may be the work he has to do when he picks up his job.

As the purpose of functional therapy is to reestablish employability, the patient must be able to develop the skills he had in his regular occupations. Accordingly, the work modalities should be so far as possible the tools which the patient uses in his regular occupation. This has a threefold advantage: (1) The patient does not have to learn a new technic; (2) the proper muscle groups are exercised, and (3) the patient is able himself to note his progress and to help decide on his fitness for work.

Planning patients' projects and programs is one of the most vital duties of the therapist in a functional occupational therapy workshop. Thoughtful planning is required in order to give good treatment. Projects should be chosen which provide the proper weight and type of exercise and which also appeal to the patient. The tasks should be so simple that the patient does not spend too much time in learning them and that they may be easily analyzed by both the physical therapist and the occupational therapist to determine whether the desired action is being made. There should also be a specific goal to the task being performed, and it should not be justified on the grounds of making the patient happy or keeping him amused.

The project, its size, design, etc., should be planned in advance. The patient should have a clear concept of the project and what it should look like when completed. Dimensions and specifications should be written down and kept with the work, so that they may be quickly consulted. Sufficient material should be set aside so that the patient will not be delayed or stopped by lack of material. These precautions must be taken in order to produce an attractive, well made article and to maintain a high standard of workmanship, without which there is not satisfaction for the patient.

Before one project is finished, the therapist should plan for future projects. These projects should be part of a graded program of exercise. The therapist should make out a weekly plan for the coming week. The weekly plan should show the next step in the program for each patient. It is important that the patient graduate from light to heavier work as soon as

possible, and the therapist must always have the next step planned in advance. Unless this is done, the work ceases to be functional.

So much for occupational therapy as it now is practiced in most civilian hospitals. What about the future?

Three years ago, Dr. A. B. C. Knudson, of the Veterans Administration, gave a talk before this group on the subject, "Dynamic Physical Medicine," in which he explained how occupational therapy, physical therapy, corrective therapy, manual arts therapy and educational therapy were teamed up to treat the "whole man." This concept of a planned convalescence, as practiced by the Veterans Administration, calls for a unit in a hospital where in-patients and out-patients may attend an all day program of physical educational, recreational and occupational activities under constant medical supervision. Thus, diagnosis, medical and surgical treatment, nursing care, physical and occupational therapy, psychiatry, social service and other associated services of the hospital cooperate to direct treatment toward the individual as a whole, toward his mental and emotional reactions and his physical ailments.

How far should civilian hospitals go in providing these procedures? Perhaps it is not within a hospital's sphere of action to retrain patients to new jobs. However, I believe it is within a civilian hospital's sphere to prepare the patients, both physically and mentally, to the point that they can resume their former occupations or to the point that they can start their vocational retraining program.

With this broader goal in view, we are beginning to realize that an hour's treatment twice or thrice a week is not enough but that patients in our care will require a continuous treatment of at least six hours a day throughout the week and that most of these hours will be spent in the occupational workshops.

Granted that these more intensive procedures are correct, why has the trend for better occupational therapy facilities not been accelerated in civilian hospitals?

In my opinion, there are many reasons that occupational therapy has not progressed in civilian hospitals. Some of them are the following:

1. Postwar apathy. We soon forgot the war and the need to hasten convalescence. We drifted back to the old ways, because habit is a strong master. Occupational therapy, which made a valiant effort in many civilian hospitals to foster modern functional therapy is now drifting back to the easier-administered diversional therapy, because physicians fail to refer patients for functional work.

2. Poor location of occupational therapy facilities. The occupational therapy workshop and the physical therapy unit must be contiguous for efficient service. When the two units are adjoining, the patients will then realize that physical and occupational therapy are part of the same treatment. In too many hospitals, these units are on separate floors, and many a patient is lost when he leaves physical therapy to find the occupational workshop. This problem is difficult to remedy at the present time, because the average hospital has outgrown its original facilities. The war stopped most construction, and hospitals now find themselves overcrowded, with little or no space for new units or for the consolidation of old units.

3. Lack of funds. Occupational therapy departments are hampered by lack of funds. Many such departments do not charge treatment fees. New equipment costs money, and hospitals do not get large donations from benefactors as they did before the income tax was raised sky high.

4. Lack of research. There has been a woeful lack of carefully controlled experimental research to prove the value of occupational therapy in the recovery from disease and illness.

5. Lack of medical supervision. Occupational therapy, like physical therapy, suffers from lack of proper medical supervision, because there are not enough physiatrists to go around.

6. Lack of qualified therapists. One of the most exasperating obstacles to a healthy growth of occupational therapy is the lack of qualified therapists, especially functional therapists. Marriage is the great competitor of occupational therapy departments. A few months ago, I asked an occupational therapy student whether the members of her class had accepted jobs. She replied: "Oh, very few of us are looking for jobs. Most of us plan to marry when we graduate." In our hospital we have had three chief occupational therapists during the past three years. All three resigned to marry. It is impossible to expect a department to progress when there is such a large turnover in key positions.

We must face the future with a more complete understanding of our problems — a realization that we are living at a period when many accepted beliefs and professional traditions are being discarded on the basis of experience and experimental study. Occupational therapists and physical therapists must realize that they are an integral part of physical medicine, each complementing the other.

The therapists of the future must be trained to meet these new requirements. The coordination of physical and occupational therapy must be started in the training schools. These schools must also be alert to the changes that are taking place in physical medicine. Easy-going methods must be discarded, and a spirit of inquiry for more intensive and better methods must be encouraged. Schools should provide facilities for research in physical medicine. In addition, the future therapists of both branches will have to learn a good deal more about tests and measurements for both diagnostic and treatment purposes. We cannot allow our present hit-and-miss methods of observation and guesswork to continue. The therapists should also have a working knowledge of the theory and practice of job analysis, of psychometric testing and of various phases of recreation.

In conclusion, the principles of coordination should be embodied in actual practice. Recent graduates of occupational therapy schools should serve a brief internship in physical therapy units, and physical therapists should likewise serve in occupational therapy departments. In this way actual experience will be gained, and a better understanding of each other's problems can be attained.

MEDICAL PHYSICS, PHYSICAL MEDICINE AND REHABILITATION *

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In recent years more and more attention is being focused on that field of science in which the boundaries of medicine and physics overlap. The relationship of physical medicine and medical physics is a close one. In physical medicine the physician uses physical methods and agents in diagnosis and treatment, while in medical physics the physicist applies physical principles to medical procedures and develops methods and tools essential to the physician in this work. More and more basic work along these lines is being carried out in numerous institutions, and the time has come for practical application of basic physics.

In this discussion we shall endeavor to bring to your attention some fundamental work which has been made possible by the close collaboration between physicist, physiologist and physiatrist. We shall mention some basic problems that need further investigation and study to promote further sound scientific application of this rapidly expanding specialty.

The close relation of the basic sciences of physics and physiology to physical medicine is further borne out by the numerous reports on subjects such as electromagnetic radiation, mechanics of motion and, more recently, ultrasound. Electrophysiology and the circulatory effects of physical agents have long been popular subjects for research by physiatrists. Watkins[1] points out that the recent advances in endocrinology as related to rheumatoid arthritis in the use of the new drugs ACTH and cortisone may bear a relationship to the beneficial effects of physical agents in producing improvement not infrequently observed after application of physical agents. Although such relationships are obscure at the present time, similar observations are being made in other fields of therapeutics — just for example, that nitrogen mustard gas produces similar effects in Hodgkin's disease to those of roentgen therapy. Methods must be developed to pursue these studies further.

Climate and weather is an important subject needing further study. It is known that climate and weather influence physiologic functions. Sudden weather changes may seriously disturb tissue functioning in ways as yet little understood. In recent years more study has been made as to how climate influences the organism. Work by Peterson[2] and Mills[3] has again stimulated interest in this subject from a medical standpoint. Knowledge as to the workings of climatic factors is expanding rapidly, and as more scientific information becomes available it should be helpful in the understanding and possible prevention of many types of infectious attacks, particularly those of respiratory and rheumatic nature.

* From the Cleveland Clinic and the Frank E. Bunts Educational Institute.
* Read before the Section on Physical Medicine and Rehabilitation at the Ninety-Fifth Annual Session of the American Medical Association, San Francisco, June 28, 1950.

1. Watkins, A. L.: New Avenues for Research in Physical Medicine and Rehabilitation, Arch. Phys. Med. **31**:107 (Feb.) 1950.
2. Peterson, W. F.: The Patient and the Weather, Ann Arbor, Mich., Edwards Brothers, 1934-1940.
3. Mills, C. A.: in Glasser, O.: Medical Physics, Chicago, The Year Book Publishers, Inc., 1944, p. 232.

Closely associated with climate is the use of spa therapy, which utilizes mineral waters, associated with arrangements of a general program including rest, exercise, recreation and dietary regulation. This type of therapy has been in use for many years and has been more extensively used in Europe than in the United States for therapeutic purposes both for disease and in health. In spite of the long use, there is still basic knowledge lacking relative to the mechanical application of water, mechanical pressure, buoyancy, tonicity and gaseous diffusion.

In order to arrive at any satisfactory conclusions in this field, large numbers of careful observing stations of both weather and climate conditions, as well as close collaboration with health centers making close observations on patients and normal persons for controlled studies, would be necessary. Although individual efforts have been made along these lines,[4] there has not been sufficient general interest to evaluate and possibly extend these findings.

Discussing hydrogymnastics, or underwater exercises, Hansson[5] stated that it was felt that chemicals held in water were the beneficial agents responsible for the therapeutic effects of spas and springs. The development of underwater exercises can be traced to bathing in these springs, the principle being that buoyancy is utilized so that the effects of gravity are eliminated and resistance is equal in all directions of movement. Comparative studies of exercises both in and out of water would more specifically determine the proper application of the above principle. Such studies should include a correlation between muscle strength and the specific gravity of water with chemicals in pools and tanks.

The whirlpool bath locally, and the Hubbard tank generally, have been accepted methods of application of heat by water and massage by aeration. It is known that the average patient can tolerate water of 115F. when it is in motion, although he will complain of burning with an unagitated water temperature of 110 F. According to Wyman,[6] the reason for this is not known and may be entirely psychologic. Recent basic studies by Cohen, Martin and Wakim[7] on the effects of the whirlpool bath with and without agitation on the circulation in normal and in diseased extremities showed that immersion of extremities in a whirlpool bath with agitation did not differ significantly from that following immersion without agitation. This is just one piece of evidence to show that the agitation does not seem to have as much effect on blood flow as we had previously thought. In this connection, other mechanisms such as pain threshold and nervous reflex processes will have to be investigated, as well as the massaging effects of aerated water.

Studies[8] of exercises given to normal upper extremities in paraplegics revealed that there is no material change in circulation of the paralyzed extremities nor does it influence atrophy of muscle or bone in the paralyzed limbs. However, the study suggests that in patients with normal innervation of immobilized limbs, heavy exercise of the free extremities might be beneficial. In a normal person strenuous exercise is necessary to increase circulation, and the effects of exercise are much greater when performed under the supervision of a therapist.

4. McClellan, W. S., and Barr, D. P.: Hydrotherapy and Balneotherapy, in Modern Medical Therapy in General Practice, Baltimore, Williams & Wilkins Co., 1940, vol. 1, p. 415.
5. Hansson, K. G.: Hydrogymnastics, in Glasser, O.: Medical Physics, Chicago, The Year Book Publishers, Inc., 1944, p. 817.
6. Wyman, J. F.: Hydrotherapy, in Glasser, O.: Medical Physics, Chicago, The Year Book Publishers, Inc., 1944, p. 819.
7. Cohen, L.; Martin, G. M., and Wakim, K. G.: Effects of Whirlpool Bath With and Without Agitation on Circulation in Normal and Diseased Extremities, Arch. Phys. Med. 30:212 (April) 1949.
8. Wakim, K. G.; Elkins, E. C.; Warden, R. E., and Polley, H. F.: Effects of Therapeutic Exercises on Peripheral Circulation of Normal and Paraplegic Individuals, Arch. Phys. Med. 30:80 (Feb.) 1949.

Evidence supports the hypothesis that after acute anterior poliomyelitis the remaining innervated muscles respond to progressive resistive exercises by an increase in strength and work capacity in much the same manner as normal muscles but to a degree proportionate to the number of remaining innervated muscle fibers.[9] Gallagher and DeLorme,[10] in their work with progressive resistance exercises especially as applied in the after-care of knee injuries and low back strains, give a method of obtaining a quantitative test for measuring muscle strength.

Newman[11] developed and described a mechanical myometer. This instrument is a means of more precise and scientific evaluation of impaired neuromuscular function and more accurate determination of the value of prescribed treatment. Proof of the accuracy of this apparatus will require extensive studies as well as modification to meet specific needs.

Quantitative and mechanical methods must be standardized for measuring muscle strength so that the prescription for exercises becomes more specific in relation to amount of muscle tissue present and to progress toward recovery.

Only recently[12] has the analytical study of forces been carried over to the study of bone stresses, tendon and muscle tensions and of the elastic constants of these materials. The understanding of the elementary principles of mechanics reveals the stresses in the various joints and in other parts of the skeleton and in the muscles, which are of a far greater magnitude than has been realized. It has been shown the normal stresses in an ankle joint may rise to several times the entire weight of the body of which it forms a part. The application of mechanical aspects as relate to the body is of basic importance in the field of physical medicine and rehabilitation.

Massage, according to Pemberton and Scull,[13] represents one of the oldest procedures to alleviate painful and distressing symptoms of disease and injury. Probably because of its antiquity and consequent acceptance of its efficacy, massage has been exploited by practitioners. In view of the relative lack of precise data bearing upon the influence of massage, there has developed a questionable attitude in many circles toward its legitimate value. Appreciation of the potentialities of massage as well as of its limitations is growing; recent physiological and biochemical studies of subjects undergoing massage have provided promising data revealing the nature of the physiological response. The specific physiological factors involved in achieving clinical results have been difficult to determine. Much of the benefit depends on reflex and mechanical effects on venous and lymphatic circulation. Less evident and less simple in its mechanism is the reaction of the arterial and arteriolar system to massage. It has been demonstrated[14] that with deep stroking and kneading massage there is comparatively slight and insignificant change in circulation of normal limbs, while vigorous, stimulating massage significantly increases circulation. In flaccid paralysis deep stroking and kneading massage increases blood flow. Massage, either alone or in combination with other types of physical therapy, is used extensively in treatment of paralyzed muscles. Little information is available as to its effectiveness.

9. DeLorme, T. L.; Schwab, R. S., and Watkins, A.: Response of Quadriceps Femoris to Progressive Resistance Exercises in Poliomyelitis Patients, J. Bone & Joint Surg. **30A**:834 (Oct.) 1948.
10. Gallagher, J. R., and DeLorme, T. L.: Use of Technic of Progressive Resistance Exercise in Adolescence, J. Bone & Joint Surg. **31A**:847 (Oct.) 1949.
11. Newman, L. B.: New Device for Measuring Muscle Strength: Myometer. Arch. Phys. Med. **30**:234 (April) 1949.
12. Harrington, E. L.: Expanding Role of Physics in Biology and Medicine, Tr. Roy. Soc. Canad. **41**: Section III (May) 1947.
13. Pemberton, R., and Scull, C. W.: Massage, in Glasser, O.: Medical Physics, Chicago, The Year Book Publishers, Inc., 1944, p. 709.
14. Wakim, K. G.; Martin, G. M.; Terrier, J. C.; Elkins, E. C., and Krusen, F. H.: Effects of Massage on Circulation in Normal and Paralyzed Extremities, Arch. Phys. Med. **30**:135 (March) 1949.

In an experimental study[15] on dogs massage was given from eight to 34 weeks. On completion of the study, the weight and strength of the massaged and of the untreated muscles were similar, and therefore the massage apparently was of no definite value. These findings emphasize the need for more basic studies of massage and the establishment of specific technics for massage in various disease conditions. In addition to further investigations relative to manual massage, similar studies should be made to prove or disprove the clinical application of mechanical methods of giving massage.

Even though Galvani in 1780 first observed the twitching of the muscles of a frog's leg under the influence of electricity, no scientific classification of various currents has been developed up to the present time. It has been pointed out by Kovács[16] that the nomenclature applied to the various currents by manufacturers offering apparatus is bewildering and confusing. There is no question that further fundamental and basic research in low frequency currents would help to solve unanswered questions.

Recently Sarnoff[17] and others have utilized electrical stimulation of one or both phrenic nerves as a means of artificial respiration. This application of current may prove of value in eliminating bulky and cumbersome apparatus in respiratory difficulties. Rose and Mead[18] have measured tactile sensation and pain produced by passage of an electrical current which should be a beginning in the development of an objective clinical method of measuring the pain threshold.

The use of microwaves has been introduced recently as a method of local heating. There are still unanswered questions about this new heating agent. The introduction of microwaves was superior to that of short wave diathermy because of excellent studies by several groups of independent investigators. Attention has been called to the absence of confusing facts when microwaves were introduced compared with those that existed when short wave diathermy was introduced.[19] This shows the effectiveness of controlled and detailed investigation in the value of presenting a new physical agent.

One of us[20] has emphasized previously the great need for accepted physical terms to be substituted for the less scientific terms often used in physical therapy procedures.

Artificial sources of infrared and ultraviolet radiation or combinations of the two are to be found in every physical therapy department. Abundant literature on the manifold types of such sources, on their spectral emission, on their output and on the distribution of radiation is available. However, the fact remains that there does not exist a simple logical dosage system comparable to that used in roentgen or radium or isotope therapy, where fundamental difficulties are more complicated.

In the case of the nonionizing infrared rays, conditions for dosimetry are relatively simple. Thermocouple or resistance thermometric instruments on the market permit measuring temperatures on the surface of the body; heat penetration for given infrared sources can be determined on tissue or phantoms, and, so far as distribution of radiation for a variety of sources

15. Wood, E. C.; Kosman, A. J., and Osborne, S. L.: Effects on Massage in Delaying Atrophy in Denervated Skeletal Muscles of Dogs, Phys. Therapy Rev. **28**:284 (Nov.-Dec.) 1948.
16. Kovács, R.: Low Frequency Currents, in Glasser, O.: Medical Physics, Chicago, The Year Book Publishers, Inc., 1944, p. 1048.
17. Sarnoff, S. J.; Hattenbergh, E., and Whittenberg, J. L.: Electrophrenic Respiration, Science **108**:482 (Oct.) 1948.
18. Rose, D. L., and Mead, S.: Electric Tests of Sensation: Voltage — Duration Curves of Tactile Sensation and Pain, Arch. Phys. Med. **29**:627 (Oct.) 1948.
19. Microwave Diathermy — A Double Progress, editorial, Arch. Phys. Med. **30**:47 (Jan.) 1949.
20. Glasser, O.: Medical Physics, Arch. Phys. Med. **30**:5 (Jan.) 1949.

is concerned, we have now the distribution curves of Rovner[21] which he measures with an ingenious scanning method.

For ultraviolet sources we, unfortunately, do not have nearly so much clear cut information. Scanning curves for ultraviolet sources are, of course, just as desirable, as for infrared sources, or even more so, but, in addition, a limitation and standardization of ultraviolet sources to those really needed seems highly desirable. Finally a dosage system — not unlike the one used in roentgen therapy — should be introduced which would permit determining the spectral distribution of the source of radiation as well as measuring the amount or quantity or dose of radiation applied to the patient, both in internationally accepted reproducible units. It is in this special field that medical physicist and physiatrist will find a rewarding field for study. For only a thorough understanding of the quality and quantity output of individual radiation sources will permit entering that promising new field of observing the biological effects of various controlled combinations of such sources.

Six years ago attention was called to the possible use of ultrasonic energy in medicine ("Medical Physics I"). Meanwhile, ultrasonic generators of a large variety of power, output and frequency have appeared both in this country and abroad and are used for a great many medical purposes. Although some fine conservative observations have been reported,[22] they have been overshadowed by the usual overenthusiastic and not entirely reliable reports from many places, notably from abroad. Here again is a clear example of the introduction of a new agent of physical medicine which requires the closest and most careful collaboration between physiatrist and physicist to overcome the pitfalls of its use to obtain reliable and satisfactory results.

Electromyography affords an objective test for recording voltage generated by normal and abnormal voluntary muscles. Such studies have been of value in differentiating neuromuscular diseases. This diagnostic measure should become more valuable as an aid to neurological examinations as further evidence is accumulated.[23]

Evaluations in occupational therapy have been established for the patient's mechanical ability, but there is a lack of comparable units in the field of personal characteristics, such as may be observed through the patients activities. In one report[24] measurements of social attitude, work tolerance, efficiency, accommodation ability, emotional set and quality of work were estimated. This attempt at specific measurement is important as a beginning in the objective methods of measurement in occupational therapy and should be extended.

Summary

Further progress in the science of physical medicine and rehabilitation depends on organized collaboration between the physiatrist and the physicist interested in medical application of physical principles.

It is hoped that such a collaboration will develop to the fullest and that the result of such efforts will advance this specialty further along a sound and scientific course.

21. Rovner, L.: Infra-red Radiation Sources and Their Analysis with Scanner, Springfield, Ill., Charles C Thomas, 1950.
22. Nelson, P. A.; Herrick, J. F., and Krusen, F. H.: Ultrasonics in Medicine, Arch. Phys. Med. **31**:6 (Jan.) 1950.
23. Golseth, J. G., and Huddleston, O. L.: Electromyographic Diagnosis of Lower Motor Neuron Disease, Arch. Phys. Med. **30**:495 (Aug.) 1949.
24. Beals, R. G.: Measurable Factors in Psychiatric Occupational Therapy, Am. J. Occup. Therapy **3**:297 (Nov.-Dec.) 1949.

CONTINUOUS TETANIZING (LOW VOLTAGE) CURRENTS FOR RELIEF OF SPASM *

A Clinical Study of Twenty-Seven Spinal Cord Injury Patients

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Spasm is a major problem in the management of the patient with spinal cord injury. As long as gross spasm persists it is difficult to position the patient properly for muscle reeducation, corrective exercises and gait training. Various modes of drug therapy, mechanotechnics and surgical intervention have been utilized to diminish spasm. In general, the usual methods of treatment fail to produce good results or are impractical.

A short period of relaxation has frequently been observed following brisk passive exercise to a spastic extremity. We felt that constant vigorous exercising might result in some "fatigue" phenomenon and produce relaxation of a degree and duration beneficial to the patient. A preliminary attempt to substantiate this tenet was made by using a continuous faradic current on a patient with spastic paralysis resulting from complete cord section at level of the eleventh thoracic vertebra. The current was given over a spastic quadriceps group at its origin and its insertion. It was found that when sufficient amounts of current were given to keep the muscle in tetanus for 7 to 15 minutes there was relaxation of the muscle group immediately after use of the current and that the relaxation persisted from two to six hours. When similar results were observed in two other patients with no ill effects being evident, a study to ascertain the clinical value of this observation was initiated. A similar use of electrical stimulation for the relief of spasm has not, to our knowledge, been reported in the literature.

Experimental Procedure

Subjects. — The subjects studied were 27 cord injury patients. They were selected from a group of 167 paraplegic patients of the Cord Injury Service of the Veterans Administration Hospital at Richmond, Va., because their spasm presented a major obstacle in their rehabilitation program. Of these 27 patients, 16 had complete motor loss below the level of injury and 11 showed spotty voluntary motor function of varying degrees below the injury. Sensory changes were found in all patients. There was complete loss of sensation in 16 subjects, while of the remaining 11, four evidenced hyperesthesia over areas below the lesion and seven showed hypesthesia over comparable areas.

Methods. — Moistened conventional pad electrodes were placed in good contact with the skin over the spastic muscle to be treated. Originally the electrodes were placed at the origin and at the insertion of the muscle, but it was found that equally good results could be obtained when the electrodes were placed over the muscle belly. Either faradic current (60 to 100 cycles per second as measured by the oscilloscope) or sinu-

* From the Department of Physical Medicine, Veterans Administration Hospital, Richmond, Virginia. Published with permission of the Chief Medical Director, Department of Medicine and Surgery, Veterans Administration, who assumes no responsibility for the opinions expressed or conclusions drawn by the authors.

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soidal current (60 and 350 cycles per second) was started and gradually increased in intensity until muscle tetanus could be observed. When the muscle became adjusted to this degree of stimulation and tetanus diminished, the current was slowly increased to maintain maximum contraction. A variation of this method which proved effective in many cases was to increase the current to a degree that muscle tetanus occurred, to depress the current until the muscle relaxed and then to amplify again slowly until tetanus reappeared. The depression of the current for muscle relaxation was done quickly, while the increase for tetanus was given slowly. Better results were obtained by this method in patients who could tolerate high currents. Treatment was given for 15 minutes in almost all cases, as this time produced optimal results in the preliminary and later studies.

For purpose of evaluation the degree of muscle relaxation which occurred after treatment was graded numerically on the following basis: excellent (complete relaxation), 4; good, 3; fair, 2, and poor, 1; (no relaxation, —). The average of the grades assigned by four observers was taken as the degree of relaxation resulting from each treatment. The four observers were either of two of the authors (W. J. L. and J. P. McG.), the physical therapist administering the treatment, the corrective exercise instructor working with the patient and the patient himself. The regularity with which each patient received treatment was noted as the regularity index. This was determined by dividing the number of days in which treatment was given by the number of days for which treatment was scheduled.

Three series of experiments were performed. In the first series faradic current was used; in series II, treatment was given with sinusoidal current, and in series III sinusoidal current was applied to those patients who had previously received treatment with faradic current when they were subjects in series I.

Results and Interpretations

In the table are summarized pertinent data from the three series of experiments. In series I, in which faradic current was used, all 19 patients showed relaxation of spasm after some or all of the treatments. There were two patients in whom on several occasions no relaxation was observed following treatment. The average degree of relaxation per patient was 2.4, or better than fair on the arbitrary scale of grading described earlier. Two of the patients in this series reported an increase in spasm immediately following one or more treatments, but the other subjects could detect no increase. The duration of the relaxation varied from 0 to 20 hours and averaged almost four hours per patient. Analysis of the data revealed no consistent increase or decrease in either the degree or the duration of relaxation with increment in number of treatments.

The following clinical observations were noted: In all cases there was spread of the current to muscle groups other than those being treated. In 11 of the 19 patients there was obvious spread of impulses to the contralateral side. After treatment of one spastic leg, it was not uncommon to find some relaxation in the other leg. A Babinski reflex was frequently observed during treatment to a lower extremity. Three of the patients complained of sensations of slight burning and aching in the treated muscles. In several subjects, on whom the electrodes had been placed too close together, minimal erythema occurred between and around the electrodes during treatment. Some of the patients complained of "tightening of the bladder," and in one patient voiding was consistently initiated by the treatment; three had penile erections occurring irregularly during treatment. In seven patients who retained some voluntary muscle control, coordination of gross movements was improved. Voluntary muscle-nerve tests performed on patients with functional return, before and immediately after series I, indicated that no patient suffered regression of voluntary movement, while in several improvement was noted.

The degree of relaxation which followed treatment with the sinusoidal current in series II ranged from fair (2) to excellent (4). The average degree of relaxation per patient was 3.7. In only one patient of this series was there an increase in spasm following treatment, and this occurred after two treatments only. The duration of the relaxation varied from one to 12 hours following treatment, and the average duration per patient was almost eight hours. As in series I there was no progression or regression noted in the degree or duration of relief as the number of treatments increased.

In series III, the degree of relaxation ranged from fair to excellent and the average relief per patient was 3.2, or slightly better than good. The duration of relaxation varied from two to 20 hours immediately following treatment and the average per patient was approximately 10 hours (table).

The following clinical observations were noted in series II and III: Four patients in these series complained of mild "burning and drawing" on several occasions during treatment. The Babinski response was demonstrable

Results of Three Series of Experiments in Which Patients Were Treated With Continuous Tetanizing Currents for the Relief of Spasm.

	Series I (Faradic)	Series II (Sinusoidal)	Series III (Sinusoidal Following Faradic)	Total
Number of patients	19	8	6	27*
Total number of treatments	346	112	225	683
Average number of treatments per patient	18.2	14.0	42.5	30.6
Average regularity index	0.79	0.94	0.91	0.85
Duration of relief in hours —				
Average duration of relief	3.9	7.9	9.9	6.0
Average greatest duration of relief	6.7	11.5	14.3	9.3
Average shortest duration of relief	2.1	5.0	4.0	3.2
Degree of Relaxation —				
Average degree of relaxation	2.4	3.7	3.2	2.8
Average highest degree of relaxation	2.8	4.0	3.5	3.2
Average lowest degree of relaxation	1.5	3.4	2.8	2.2

* The 6 patients in series III also participated in series I.

in only three patients, and reflex stimulation or spread of impulses was less than in the series using faradic current. In all subjects tested in these two series, erythema and sweating were observed between the electrodes and in the surrounding area; cutis anserina was observed in three patients. Burns, varying from 2 to 6 sq. cm. in area, occurred in 5 patients. Sloughing followed blistering in every case, with the Pyocyaneous organism being the overwhelming invader. Saline irrigations and boric acid crystals followed by elastic bandaging were used with good therapeutic results.

Comparisons of the results in the three series of experiments are shown graphically in the charts. Relaxation of muscle spasm, lasting for an appreciable length of time following treatment, occurred in each of the three

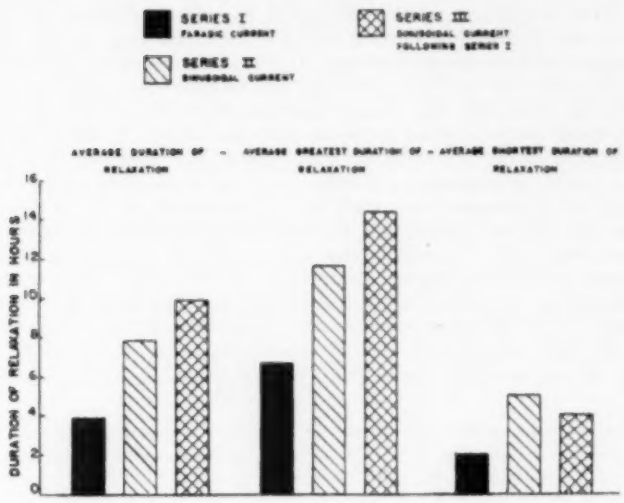

Chart 1. — Average duration of relaxation.

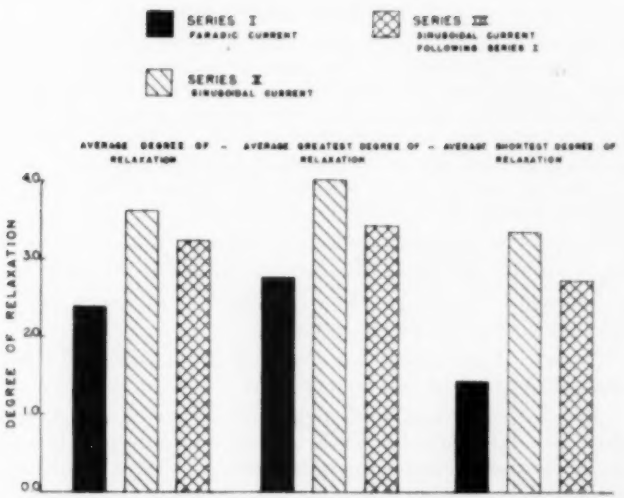

Chart 2. — Average degree of relaxation.

series. The average degree of relaxation was good or better for the two series in which sinusoidal current was two times as long as that resulting from treatment with faradic current. It may be noted in the table that the regularity index for series II and III was greater than that for series I, and that for series III the average number of treatments per patient was roughly three times as great as in the first two series. It would seem that a relationship might exist between the number and regularity of treatments and the results of treatment. Further analysis of the data reveals that the regularity of treatments apparently has no influence upon duration of relaxation but that it is associated to some extent in a positive manner with degree of relaxation. No relationship was found to exist between the number of treatments and the degree or duration of relaxation. We do not feel that the degree of relaxation is necessarily dependent upon the individual's regularity index, however, since it was noted that those patients who obtained the most benefit with early treatments continued to report for further therapy with greater regularity than did patients whose relaxation was less marked.

The Babinski reflex did not occur as frequently in the two series using the sinusoidal current as it did in series I, using faradic stimulation. The incidence of local erythema with burning was higher in series II and III.

Since the completion of these experiments, the treatment of the cord injury patient with sinusoidal current has become a more or less routine procedure preliminary to the exercise program at the Veterans Administration Hospital in Richmond. Improved technic has eliminated the danger of burns. It has also been found that good results are obtained when galvanic and sinusoidal currents are used simultaneously. The advantage of this combination, obtained with the Teca CD7 machine, is that less sinusoidal current is necessary to produce muscle tetanus, and for the patient with sensation this is important. The data from these more recent observations will be reported at a later date.

Summary and Conclusions

Twenty-seven spastic spinal cord injury patients were treated with continuous tetanizing currents for the relief of spasm. Three series of experiments were performed: In the first series, faradic current was used; in the second, sinusoidal current, and, in the last, sinusoidal current was used with subjects who had previously had a series of faradic treatments. A total of 683 treatments was given to 12 primary muscle groups. The technic of administering treatments was standardized. The resulting data presented evidence that supports the following conclusions:

1. The use of continuous tetanizing currents produced temporary relaxation, in varying degree, of muscle spasm in cord injury patients.

2. Sinusoidal current produced relaxation of a greater degree and a longer duration than did faradic current.

3. Technic of application must be carefully standardized when one is using sinusoidal current so as to prevent the occurrence of burns.

4. Regularity and number of treatments apparently had little cumulative effect upon duration of relaxation. Although a positive relationship exists statistically between the regularity of treatment and the degree of relaxation, this relationship is probably due to the fact that those patients who obtained relief from early treatments continued to report regularly for therapy.

Discussion of Papers by Dr. Lee and Others, and Dr. Francis X. Sweeney and Others *

Dr. Max Newman (Detroit): It has been a privilege to hear these two excellent discussions, one which clarifies some of the older concepts that we have about radiant heating, and particularly the concept that one type of energy has greater efficacy in heating than another type. The second paper, of course, is a very excellent presentation, particularly in relation to the therapeutic possibilities of an electric current.

I am going to reverse the discussion and talk first about the infrared heating and the implications from a therapeutic standpoint. The paper as presented to us indicated, I think, rather clearly that one can use infrared rays or one can use luminous heat — that is, near or far type of heating, and get essentially the same result, the difference being that in far infrared, the penetration is probably greater than in near infrared, which is a concept that we have to reverse in most of our physical medicine textbooks. But from a practical standpoint, whether we use a near or far type of infrared lamp, the important element and the important factor in the use is not whether one gets penetration or whether one gets conduction, but what one gets depends entirely on the quality of energy delivered to the source which is to be heated. Hence if the patient likes an infrared lamp which has a counterirritating effect rather than an infrared lamp which has a soothing effect, that is the patient's privilege to designate, and that is the type of lamp that we use on that particular patient.

The particular question that I want to ask the essayist is whether it was important from the standpoint of giving advice to people who buy radiant heat lamps as to whether they should buy lamps of great energy capacity or low energy capacity, say a lamp of 360 watts or a lamp of 1,000 watts.

Now, on the paper in reference to the use of the tetanizing current, I think that there are a great many things that arise as far as our consideration of the use of this type of current. In the first place, in the use of a continuous tetanizing current, we find, if we peruse the literature, that there is practically no reference to the use of that type of current for the purposes designated in the paper. There have been some previous references in the past to the use of the tetanizing current in sciatica and trigeminal neuralgia, and it is conceivable from the information we gather today that the good results of these rapidly alternating currents may be on a basis of relief of muscle spasm.

There are three ways of studying the relief and release of muscle spasm, and I use the term "spasm" with a great deal of temerity, because I don't know whether we are treating a patient who has muscle spasm or whether we are treating the spasticity of the muscle, but the three methods of treating muscle spasm can be demonstrated by physical, chemical and surgical methods. We are not interested in surgical methods at the moment because of the fact it is a rather complicated procedure in cutting the roots; it may not give us the sought-after results, and the chemical methods again we are not particularly interested in, although they probably explain a great deal as to why we get these results with our physical methods, and many of you have already used some of the chemical agents, such as curare, for relieving pain.

Again, by perusing the literature we find about the only way to get information on the use of these currents is by personal communications to authors.

Regarding the basic mechanisms that are responsible for the results that we observe with the use of tetanizing current, we can probably theorize more than we can be practical. We believe that there is a definite fatigue mechanism which occurs at the motor end plate and in the spinal cord as observed by some of the men who have done this work, particularly so far as the effects on crossed extensive reflexes, but the few questions that I want to put to the authors in reference to this work are, first, whether the effect of this current is the same on muscle spasm as on muscle spasticity; second, whether the higher frequency of current is better tolerated by the patient than a lower frequency — and I mean by higher frequency, as high as 1,000 to 1,200 cycles per second — and whether comparative controls were carried out in studying the effects of the tetanizing current.

* Paper by Dr. Francis X. Sweeney and others appeared in the Aug., 1950 issue of the ARCHIVES.

REHABILITATION OF CIVILIAN PARAPLEGICS IN CANADIAN DEPARTMENT OF VETERANS' AFFAIRS HOSPITALS *

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Director of Physical Medicine, Department of Veterans' Affairs, Montreal District, and Medical Director, Rehabilitation Society for Cripples

MONTREAL, CANADA

I do not intend to describe the treatment in paraplegia; this has already been well covered and extensive work is in progress. However, it seems worth while to report on a unique fact: the admission of civilian patients to Veterans' Hospitals throughout Canada.

Consequent to the last conflict, approximately 400 service personnel with spinal cord injured were repatriated to Canada. Shortly, special wards and conveniences were established in four major Canadian cities. Simultaneously, to provide full rehabilitation services, a competent staff was specially trained and posted at these departmental hospitals to care exclusively for spinal injury patients. By June, 1946, the great majority of these veterans had been discharged to their homes, most of them fully rehabilitated to work, and it became evident that the departmental centers would have to be closed and these veterans in future admitted to medical or surgical wards when reporting for routine check-ups. Naturally, this also meant the immediate disintegration of the teams.

At this time, owing to the foresight and initiative of John Counsell, himself a veteran paraplegic, and officials of the Department of Veterans' Affairs, the paraplegic centers were permitted to accept civilian cases. Another factor responsible for this step was the incessant urging and pressure from civilian hospitals, physicians and welfare workers who realized that rehabilitation services were urgently needed for the civilians.

The Department of Health and Welfare of the Province of Quebec assumed responsibility for five beds, a number which was later increased to 15. The Montreal center accepted an unlimited number of Workmen's Compensation patients from the Provinces of Quebec, Nova Scotia and New Brunswick. Similar arrangements were made to accommodate patients in the Toronto and western centers. Welfare agencies and service clubs were allowed to sponsor indigent patients, and, finally, private patients were also accepted.

After extensive studies, a compact unit, including all facilities for overall treatment and rehabilitation was opened at Queen Mary Veterans' Hospital in Montreal. Last year, to speed up the turnover, and in order to treat patients not requiring or in need of further hospitalization, an outdoor clinic for civilians was established in the same hospital. During the course of the last two years, not only patients with traumatic paraplegia, but also patients with poliomyelitis, hemiplegia and cerebral palsy, were granted admission for rehabilitation. In accordance with the recommendations of the National Research Council, patients with progressive conditions were not

* Dr. A. T. Jousse, Superintendent of Lyndhurst Lodge, Toronto, Canada, provided data on the Toronto Paraplegic Service.

* Read at the Twenty-Eighth Annual Session of the American Congress of Physical Medicine, Boston, Aug. 31, 1950.

accepted. Nonetheless, rehabilitation procedures were successfully conducted in carefully selected and apparently arrested cases of multiple sclerosis and postoperative tumors of the spinal cord.

Civilian patients in the Veterans' Hospitals are receiving full and unrestricted rehabilitation services in which there has been no change since the establishment of the paraplegic services. If anything, the program has rounded out and is proved. Therefore, there are less trial and error procedures today, and, consequently, the turnover has increased appreciably.

The department is coordinated by the director of physical medicine, who has at his disposal the services of a group of senior consultants in each specialty related to the problems of paraplegia. This group is, at the same time, a subcommittee of the hospital medical board.

During the weekly ward rounds attention is not concentrated mainly on the medical problems but is centered on all rehabilitation aspects related to the physical ailments. There is compulsory attendance of representatives of the rehabilitation and educational services, and physical therapy and occupational therapy.

During the weekly rehabilitation meetings, cases are discussed in every aspect, schedules of treatment and activities are drawn and future projects studied. After discussion, the patient is called in to participate in these informal meetings. The role of the various members of the staff is explained, as well as the tentative phases of the preplanned rehabilitation scheme outlined for his benefit. His suggestions are invited and considered, and any doubtful points are clarified. With the evolution of the program, he is recalled from time to time for changes and modifications when indicated. General policy and disciplinary problems are also discussed at these meetings, where representation is made by the Canadian Paraplegic Association. The patient's wife, parent or outsiders interested and active in the specific case, before and after rehabilitation, are also invited to help with the planning. The last four years have confirmed the efficacy of these meetings as a means of stimulation to both staff and patients, and as the only sensible way of successfully conducting such a program.

The postrehabilitation phase is most important for study. After discharge and according to level of lesions, disabilities and general condition of the case, veteran and civilians alike are called in to the center at regular intervals for clinical, roentgenological and laboratory check-ups. This method has proved most satisfactory not only for the welfare of patients but as a means of securing valuable material for studies and statistics. The intervals between check-ups vary from four to 12 months.

If the establishment and organization of the centers remained unchanged with the advent of civilians, the administrative procedures have varied and altered considerably. Whereas the veteran enters the center according to his entitlement under the pension legislation, the primary requisite for the civilian is a favorable prospect for full rehabilitation. Second, there must be guarantee of full payment for treatment to the department. The latter is not difficult when one is dealing with compensation and private patients, but the picture changes when dealing with indigents of small communities. For instance, in the Province of Quebec, the Provincial Department of Health and Welfare covers payment of half the hospitalization costs but the applicant's municipality remains responsible for the balance of the cost, which is a heavy burden on small communities, as hospitalization is frequently prolonged by corrective procedures prior to physical and vocational rehabilita-

tion. Owing to lengthy consideration and indecision of these communities to commit themselves to sponsor such treatment, there is a backlog of many worth while indigent patients who are still awaiting acceptance for admission. All costs of hospitalization, including preadmission assessment, medical supervision, surgery, medication, radiological, laboratory and rehabilitation services, are included in a daily blanket charge, with the exception of prosthetic appliances.

Private patients do not pay the Department of Veterans' Affairs directly, but the account is defrayed through a corporate body, the Canadian Paraplegic Association.

Owing to pressure from outside organizations and the increasing number of applications, strict establishment rules were enforced with regard to the admission of civilian patients.

Clients residing in the vicinity of the center or in nearby communities must report and spend one day at the evaluation clinic for assessment purposes. Transportation for this service is provided by the Paraplegic Association. The clinic provides a full battery of clinical, roentgenological and psychometric tests. A full medicosocial history is required when the patient is referred by a local hospital. In dealing with patients residing or hospitalized at distant points, a medical questionnaire is sent to the nearest social agency and a third form, for personal information, to the patient himself. After evaluation at the clinic or the receipt of the completed questionnaires, the cases are reviewed at the next rehabilitation conference and, if the patients are found eligible, they are entered on the priority list. The Canadian Paraplegic Association steps in at this point for financial arrangements.

It can be appreciated that the evaluation of patients for admission is not always an easy task. From the physical point of view, young persons or persons with recent injuries have preference over older clients or persons with old disabilities. Nevertheless, admission of an older person has never been refused when great enthusiasm prevailed and it was evident that the patient would be of asset to his community if rehabilitated. Decubitus ulcers are not, and should not be, considered detrimental except when a patient seeks readmission, because all patients are fully instructed in preventive measures previous to their discharge. On the other hand, patients with progressive conditions or ones with a high nonprotein nitrogen level or bilateral calculosis are not acceptable. Patients with psychiatric ailments cannot be considered as yet, since most of the physical rehabilitation work is conducted in groups and also because of the generally poor rehabilitation prognosis. When one is dealing with two or more patients displaying fairly similar disabilities, priority is based on the psychological testing, education and personal attitude toward rehabilitation. These rules are enforced not because better results or statistics can be produced at a later date but because there are approximately 600 paraplegics within the Province of Quebec and presently only 40 beds are available to civilian paraplegics in Veterans' Hospitals. In the circumstances, it seems just to give services to the most worthy patients who will derive personal benefit and become useful and contributing citizens. Under these arrangements, the backlog of Workmen's Compensation paraplegic patients have been successfully treated in the four Canadian centers. Their new patients are now referred to the centers as soon as possible after the acute phase of treatment in general hospitals. To date, 180 civilian patients have been treated in the Montreal center since 1946.

In Toronto, after initial treatment of these patients they are transferred to the local Veterans' Affairs Hospital, and with the culmination of active

treatment they are graduated to Lyndhurst Lodge as soon as they are wheelchair cases. Lyndhurst Lodge was the property of the Department of Veterans' Affairs until April, 1949, when it was purchased by the Canadian Paraplegic Association. Up to June, 1950 there had been 173 patients treated at the Lodge.

The admission and treatment of civilian paraplegic patients in Canadian departmental hospitals have been a most interesting and valuable experience. There is no doubt in anyone's mind that, on the whole, the physical and mental conditions of civilian patients have always been, and still are, far worse than those of the veterans who were injured overseas and were repatriated in difficult circumstances. Financial insecurity, the facts that the civilians' age bracket is generally higher than the veterans' and that there are families to support tend to aggravate social and emotional problems, which are often so acute that many patients have demanded a tremendous amount of patience and work from the staff. A last feature worthy of mention is the fact that public interest and help are not readily aroused toward the civilians, in comparison with the all-out efforts to aid the veterans.

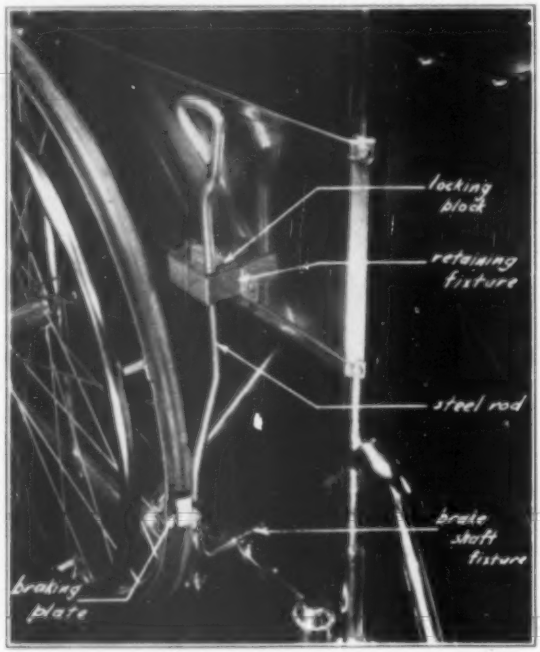
However, it is my opinion that the commencement of a rehabilitation program for civilian paraplegics in Canada has been a boon to all concerned.

Last year, a group of workers with five years' experience in the rehabilitation of paraplegic and handicapped veterans were released by the Department of Veterans' Affairs to found the Rehabilitation Society for Cripples, with offices in Montreal. As the pilot plans have ascertained that rehabilitation of the severely disabled is possible and commendable, it should be relatively easy to convince the government and the public at large that rehabilitation for all disabled is a profitable investment and one that is repaid a thousandfold in the return of self confidence, self esteem and gainful employment of a once public liability.

BRAKES FOR WHEEL CHAIR *

HARRY T. ZANKEL, M.D.
Chief, Physical Medicine Rehabilitation
and
PAUL DOELKER
Chief, Manual Arts Therapy
CLEVELAND

Wheel chair users, temporary or permanent, have frequently found the need of brake attachments to their chairs for purposes of stabilization. Such attachments permit immobilization of the chair at work, eating or play as indicated, and are especially valuable for handicapped persons whose upper extremities are too weak to control the wheels of their chairs up and down an incline.



We have found from experience that the brake attachments herein described are easy to make and serve the purposes indicated. The first set of brakes was made by one of the patients (John J. Reese) assigned to manual arts therapy for treatment. The brakes have been duplicated since by other patients as part of their treatment and rehabilitation in this section. In

* From Cole Veterans Administration Hospital.
* Sponsored by the Veterans Administration and published with the approval of the Chief Medical Director. The statements and conclusions published by the authors are the result of their own study and do not necessarily reflect the opinion or policy of the Veterans Administration.

the illustration, one brake only is shown. A similar brake is attached to the opposite side of the chair.

The principal unit of each brake is a 5/16 inch steel rod bent as shown and fitting into the brake shaft fixture located on both left and right lower rung. A metal braking plate (approximately 1½ by 1 by ⅛ inch thick), shaped to the general contour of the wheel, is brazed or welded to the 5/16 inch steel rod. A sheet metal retaining fixture is fastened to each side of the wheel chair by means of sheet metal screws. The wooden locking block is fitted inside each retaining fixture and fastened to the side of the chair. The fastening is accomplished by using round headed wood screws running through holes drilled in the metal side and tightening into the locking block.

Summary

A wheel chair brake is described that can easily be made. It is not only helpful to wheel chair users, but also provides a good activity for patients assigned to Manual Arts Therapy.

MEDICAL NEWS

Chicago Society of Physical Medicine and Rehabilitation

The regular January, 1951, monthly meeting of the Chicago Society of Physical Medicine and Rehabilitation will be held Wednesday, Jan. 24, 1951, in lecture room A, Loyola University Medical School, 706 South Wolcott Avenue, Chicago, 8:00 P. M. "Physiology of Exercise" is the topic to be presented by the guest speaker, Professor Arthur H. Steinhaus, Department of Physiology, George Williams College. Preceding the scientific program, dinner will be served at the Medical Center, Y. M. C. A., 1804 West Congress St. Reservations should be made early with the Secretary of the Society, Dr. Arthur A. Rodriquez, 30 North Michigan Ave., Chicago 2.

New York Society of Physical Medicine

The program for the regular December meeting of the New York Society of Physical Medicine, held Dec. 8, opened with a sound film, in technicolor, "Wings to Cuba and the Caribbean." This was followed by a technical forum and the scientific session. "Control of Early Hypertension by Progressive Relaxation" (illustrated case study) was subject of presentation by Edmund Jacobson, M.D. (by invitation). The discussion was opened by James Randolph Beard, Jr., M.D. (by invitation).

The Hospital Standardization Program of the American College of Surgeons

So much misinformation about the Hospital Standardization Program of the American College of Surgeons has been circulated, both in the medical press and by word of mouth, that the facts of the situation should be presented to the profession.

It has been no secret that financing this program has given the Regents concern for some time. The increasing number of hospitals requesting approval and the decreasing value of the dollar have created a serious problem. However, at no time have the Regents decided to abandon the program, and never have they made any overtures to any other organization regarding its disposal.

In July of this year, the Regents received a proposal from the American Hospital Association that the latter assume and finance the Hospital Standardization Program. A Committee of the College was appointed to meet with representatives of the A. H. A. for the sole purpose of phrasing this proposal in specific terms. It cannot be emphasized too strongly that the function of, and instructions to, this committee were limited to this purpose.

The Regents considered this proposal for the first time on August 4, 1950. It was not accepted by the College; and the Regents immediately acted to arrange for conferences with representatives of the A. M. A., the American College of Physicians, and the A. H. A. Statements that the Regents first agreed to the proposal and later reversed this decision are wholly erroneous.

Three such conferences have been held. Divergence of points of view has diminished but no agreement has yet been reached. Hope that ultimately a satisfactory agreement can be reached has increased with each conference.

The Regents have every intention of continuing the Hospital Standardization Program, upon an

expanded scale and even with deficit financing, until a solution can be found which is agreeable to the majority of the profession and which is, above all, in the best interests of the public.

Cerebral Palsy Training Course

A special four-week training course for employment and placement counselors working with cerebral palsied and other severely handicapped workers will be given March 12 through April 6, at the Institute of Rehabilitation and Physical Medicine of the New York University-Bellevue Medical Center under the auspices of the school of education of New York University.

Upon satisfactory completion of the course, six hours of graduate credit in education will be granted by the university.

Training will include case studies and evaluations, clinical study and observation, lectures by outstanding authorities on medical and psychosocial aspects of the problem, counseling tools and technics, placement tools and technics and vocational training.

Purpose of the training program is to encourage public and private agencies to increase their services for the severely handicapped. Counselors from these agencies, as well as schools and industry, will be selected for fellowships according to their qualifications and contributions they can make in effective counseling and placement work for all handicapped persons.

Persons wishing to receive a fellowship must make formal application by Jan. 26, 1951. Applications and further information may be obtained from the National Personnel Registry and Employment Service of the National Society for Crippled Children and Adults, 11 South La Salle Street, Chicago 3, Ill.

Personals

Dr. **Herman J. Bearzy** has been appointed Chief of the Department of Physical Medicine and Rehabilitation at the Miami Valley Hospital, Dayton, Ohio. He will assume his new position January 1, 1951. Dr. Bearzy succeeds Dr. **Bert C. Wiley,** who has assumed the position of Director of Physical Medicine, Acuff Clinic, Knoxville, Tenn.

Dr. **Donald A. Covalt** has been appointed to the Board of Chief Consultants to V-A's Chief Medical Director, Dr. Paul B. Magnuson. Dr. Charles W. Mayo, head of the Mayo Clinic, Rochester, Minnesota, is chairman of the advisory group.

At the annual meeting of the Ohio Council for the Handicapped, held in November, Dr. **Shelby Gamble** was elected President for the year 1950-1951.

Dr. **Eugene Moskowitz** has been appointed Director, Department of Physical Medicine and Rehabilitation, at Grasslands Hospital, Valhalla, N. Y.

Dr. **Louis B. Newman** presented a telecast on "Building A New Life" over Station WGN-TV. The television program was sponsored by the Illinois State Medical Society and showed what Physical Medicine and Rehabilitation is accomplishing for paraplegia and quadriplegia patients. The subject "The Practical Application of Physical Medicine and Rehabilitation" was presented recently to the medical staff of the Westlake Hospital by Dr. Newman.

Dr. **Harry Zankel,** Chief, Physical Medicine Rehabilitation, Crile VA Hospital, Cleveland, announces two new appointments, **Stanley F. Radzyminski,** M.D., Assistant Chief of Physical Medicine Rehabilitation Service, and Edward P. Reese, M.D., Resident.

Medical Education and Licensure

The forty-seventh annual congress on Medical Education and Licensure will be held Monday and Tuesday, Feb. 12 and 13, 1951, Palmer House, Chicago. On Sunday, Feb. 11, there will be an open meeting in the Crystal Room, Palmer House, of the Advisory Board for Medical Specialties.

Recreation and Physical Therapy Center

Ceremonies for laying the cornerstone of the new recreation and physical therapy center building at Oak Forest (Illinois) Institutions were held recently. Oak Forest Institutions, which opened in 1910 as the County Poor Farm, has been converted into an institution for the care of the aged and the chronically ill with a geriatric hospital in connection with it. Today's average population is 2,700 patients. Research will be a part of the new rehabilitation program. At least 300 patients may participate in the occupational therapy and physical medicine program daily. The department is suitably equipped for teaching spastic patients.

Apparatus Accepted

Moistaire Heat Therapy Unit Model 420-6.—Heats and humidifies air under thermostatic control for therapeutic application to large areas of body. The Council on Physical Medicine and Rehabilitation voted to include the apparatus in its accepted list.

Stephenson Resuscitator, Minuteman Model. — Portable apparatus for artificial respiration, sometimes called the Camp Model. Of the intermittent positive and negative pressure type, it can be used as a resuscitator, inhalator or aspirator. The Council on Physical Medicine and Rehabilitation voted to include the Minuteman Model of the Stephenson Resuscitator in its list of accepted devices.

Westinghouse Infrared Heat Lamps, R-40. — Designed for various domestic applications of radiant heat. The Council on Physical Medicine and Rehabilitation voted to include the R-40 lamps in its list of accepted devices.

Resp-Aid Positive Pressure Mask, Model 350. — Utilizes a tube immersed in water to control degree of pressure. The Council on Physical Medi-

(Continued on page 781)

ARCHIVES of PHYSICAL MEDICINE

OFFICIAL PUBLICATION AMERICAN CONGRESS OF PHYSICAL MEDICINE

EDITORIALS

MESSAGE FOR THE NEW YEAR

It is appropriate at this time to wish all members of the Congress and readers of THE ARCHIVES a joyous Christmas and a successful and Happy New Year. During the past several years we have obtained well earned recognition as an established medical specialty. We have seen the formation of our own American Board of Physical Medicine and Rehabilitation and now have over one hundred and fifty certificants. Another sign of our progress is our permanent Section of the American Medical Association. Our major goal for the New Year is to consolidate our scientific gains by more and increasingly better research and to further undergraduate and postgraduate education in our field. Our educational needs stand out, as the demand for the services of physiatrists in clinical positions still outnumbers by far the available trained doctors.

Unfortunately, we are still suffering from growing pains and apparently still do not really know what to call ourselves. The value of a short name to indicate our specialists has long been recognized, and finally the term "physiatrist" was chosen and accepted. But it is still used almost exclusively in formal written presentations and probably means virtually nothing to the lay public and the majority of physicians outside our field. Physical Medicine is a term we as physicians have learned to be proud of as signifying a dignified scientific branch of medicine which might be defined as biophysics applied to medical practice for diagnostic and therapeutic purposes, including the development in the disabled and handicapped of all available means to procure maximum self-independence. These latter activities are generally referred to as medical rehabilitation. We have been fortunate in joining this term to physical medicine, as it has made our specialty easily comprehended in a superficial way by the general public and the medical profession. Adoption of this term has been accompanied with some disadvantages, however, as we are subject to association with a wide variety of lay activities denoted as rehabilitation; for instance, treatment of criminals, economic improvements in undeveloped countries and repiping of sewer sytems. At the present time the advantages of joining ourselves with medical rehabilitation and taking a leading position in the field are great. We must all maturely study in our own minds this problem of nomenclature so that a proper decision is reached at our next meeting.

The importance of augmenting the productive man power of our country is increasingly apparent, and it may become a necessity for our survival. Our specialty may well be placed in a key position on this account in the civilian and military medical services. We must all increase our efforts to fulfil these needs and seek to stimulate others to join our ranks.

Considerable stress has been placed on the economic value of medical rehabilitation, and published figures tend to prove that money spent for this

purpose more than pays for itself. It is equally apparent to those in physical medicine that the individual who most needs these services is in no position to pay for it himself. Establishment of adequate facilities for physical medicine in hospitals and rehabilitation centers for community use requires large expenditures not easily obtained from private sources. Training of the many physiatrists needed must also be subsidized either by charitable sources or government grants in the majority of instances. In view of all this, one can predict that our specialty is a logical and proper point to increase the degree of governmental aid as the benefits of such aid go back to the community as a whole and not just the individual. Such aid would seem to increase self-independence in the patient rather than the opposite. The benefits of this degree of socialized medicine, accordingly, appear to outweigh greatly the disadvantages.

Let us all face the opportunities which challenge us as physiatrists with complete unity and work together toward our common goal of increasing the quality and quantity of medical services to the public, furthering research and education, all of which will lead to the further development of our specialty.

ARTHUR L. WATKINS, M.D.

NEW PHYSICAL MEDICINE AND REHABILITATION HOSPITAL

The Gonzales Warm Springs Foundation Hospital located near Gonzales, Texas, has recently been certified as a physical medicine and rehabilitation hospital by the American College of Surgeons, the first of its kind to be so listed, and for this reason should interest our readers. Because of the increased number of poliomyelitis patients in the State, this hospital was established and especially designed for long-term convalescent care. It is designed so that the 110 patients, 90 per cent of whom had poliomyelitis, may have as nearly as possible normal living conditions but at the same time some control over activities during the 24 hours a day. Physical and occupational therapy, schooling and recreation are all provided during the daytime but also positioning and traction at night if needed. A brace shop, laboratory and x-ray department are included, with a physiatrist in charge and an assistant who is a pediatrician. Orthopedic surgeons are called as indicated. The actual surgery is done elsewhere, but early transfer is recommended. Before final discharge, arrangements are made for parents or relatives to come in if home treatment is needed so that they can learn the home routine. Outpatient follow-up service is also provided.

There is certainly a real need for more institutions of this sort, and it is a sign of progress to have physical medicine and rehabilitation hospitals recognized by the American College of Surgeons. Our congratulations to Dr. Schram.

Medical News

(Continued from page 778)

cine and Rehabilitation voted to include the apparatus in its accepted list.

Batrow Neuromuscular Stimulator, Model A. — Generator of electric currents. Device has merit in electrotherapy as neuromuscular stimulator, but only for muscles possessing a normal nerve supply. The Council on Physical Medicine and Rehabilitation voted to include the Batrow Neuromuscular Stimulator, Model A, in its list of accepted devices.

Resp-Aid Oxygen Humidifier, Models 400 and 425. Designed to make oxygen from a cylinder of the compressed gas passed through a quantity of water. The Council on Physical Medicine and Rehabilitation voted to include the apparatus, Models 400 and 425, in its accepted list.

Tougas Exercising Wheel. — Rotates about a horizontal axis designed to be fastened to the wall of an exercise room. Used to improve movements of the shoulder joint. The Council on Physical Medicine and Rehabilitation voted to include the Tougas Exercising Wheel in its list of accepted devices.

American Dynatherm, XM-400. — Crystal-controlled diathermy bearing air-spaced electrodes. The Council on Physical Medicine and Rehabilitation voted to include the model in its list of accepted devices.

General Electric Cardioscribe, Model DW, Type 3. — Direct-writing portable electrocardiograph housed in wooden box with carrying strap. The Council on Physical Medicine and Rehabilitation voted to include the apparatus in its list of accepted devices.

Newly Registered Therapists

September 28, 1950

Avignon, Mr. Martin, Jr., 2532 Southern Ave., S. E., Washington, D. C.
Avignon, Mrs. Miriam, 2532 Southern Ave., S. E., Washington, D. C.
Andreosky, Mr. Michael, 235 W. High St., Nesquehoning, Pa.
Baker, Mr. Louis E., 46 Paris St., Pawtucket, R. I.
Cornwell, Mrs. Sara F., Box 24, Mathews, Va.
Crouch, Mr. Warren G., Jr., 453½ W. Cunningham, Butler, Pa.
Dichkewich, Mr. John, 40 Lawrence Ave., Milford, Conn.
Elliott, Lois M., 12 Maple Place, Silver Creek, N. Y.
Farrell, Mrs. Helen C., 4900 Grove Ave., Richmond 21, Va.
Fine, Mr. Gilbert N., 2809 Ridgewood Ave., Baltimore 15, Md.
Fitzpatrick, Gloria J., 426 Castell Ave., Rochester, Mich.
Funk, Durward R., Center St., P. O. Box 163, Rowlesburg, W. Va.
Galambos, Margaret L., P. O. Box 92, Princeton, Ind.
Gruber, Mr. James C., 426 Delaware Ave., Palmerton, Pa.
Guthrie, Mr. Ewing R., Jr., 318 N. Spruce, Little Rock, Ark.
Guza, Elinor L., 2401 Wright Ave., Richmond 24, Va.
Handerson, Martha J., Scalybark Rd., Charlotte, N. C.
Herman, Mr. Edward L., 473 Walnut St., Meadville, Pa.
Himmelreich, Mr. Lester L., Jr., 1124 Union St., Reading, Pa.
Holton, Rebecca Sue, Memorial Hosp. Bldg., Broad St., Richmond, Va.
Krajewska, Amalia H., 18 Virginia Dr., Elmont, L. I., N. Y.
Leedecke, Mr. Charles, Rt. 2, Box 289, Saugerties, N. Y.
Lineburg, Imogene W., Box 215, New Market, Va.
Lippitt, Mr. Wm. H., 400-B Madison Ave., Albany 6, N. Y.
Lloyd, Mr. Carl N., 128 Fairmount Ave., Sunbury, Pa.
McCormick, Viola M., North Java, N. Y.
McDowell, Mary F., 105 Compass Rd., Baltimore 20, Md.
Martin, Alma F., Rt. 2 % Mart Dean, Twin Falls, Idaho.
Miller, Mr. Frederick P., 107 E. Union St., Sandston, Va.
Miller, Mr. Merton E., % O. Miller, Warsaw, N. Y.
Musto, Mr. Charles T., Box 98, R. D. 1, Richmond, Va.
Oanea, Magdalena, 543 Vassar St., Wyandotte, Mich.
Orsini, Mr. Andrew A., 1703 Allen St., N. Little Rock, Ark.
O'Toole, Mr. John F., 134 Ridge Ave., Yonkers, N. Y.
Otterman, Mr. Wm. D., Traer, Iowa.
Pintado, Theresa A., 123 Aris Ave., New Orleans, La.
Rector, Kathleen J., 1020 W. 9th St., Erie, Pa.
Rhoades, Catherine P., 4210 Old Brook Rd., Richmond, Va.
Russell, Jean E., 4 W. Mt. Vernon St., Smyrna, Del.
Sergeant, Mazie E., 432 Beaumont Ave., Charlotte, N. C.
Strunk, Mr. Joseph T., 2925 Garland Ave., Richmond 22, Va.
Teasdale, Barbara E., 261 Canner St., New Haven, Conn.
Urda, Mr. Paul R., 252 Avenue "A," Palmerton, Pa.
Vickers, Mr. Robert C., P. O. Box 402, Huntsville, Ala.
Williams, Alice E., 401 Oak St., Windsor, Colo.
Williams, Winifred G., Pine River, Wis.

Newly Registered Therapists

October 10, 1950

Baird, Clatte A., P. O. Box 357, Clovis, Calif.
Burch, Elizabeth R., 609 S. E. 4th St., Ft. Lauderdale, Fla.
Busselle, Patricia J., 3850 Broadway, Boulder, Colo.
Defibaugh, Mr. Joseph J., 164 Naglee Ave., San Francisco, Calif.
Ellington, Evna N., 1248 Fulton Ave., Bronx 56, N. Y.
Goldsmith, Mary L., 215 Lawndale Ave., N. E., Grand Rapids, Mich.
Hanson, Shirley E., 3443 W. Laurelhurst, Seattle, Wash.
Harrigan, Mr. James B., 37 Church St., Saranac Lake, N. Y.
Holler, Mr. Joe H., 1702 Second St., Wichita Falls, Texas.
Hyps, Mr. Joseph R., 6613 Gertrude, Cleveland 5, Ohio.
Kisalberth, Mr. Vernon R., 395 Grape, Denver, Colo.
McClure, Mrs. Eugenia J., 777 Ash, Apt. 101, Denver 7, Colo.
Mosenthal, Mary A., 1645 Garfield St., Denver, Colo.
Musgrave, Mr. Lawrence R., 600 Redwood Ave., Apt. 3, Dayton, Ohio.
Pate, Cecile H., 304 S. Pineview Ave., Goldsboro, N. C.
Peck, Mr. James E., 514 N. 10th St., Enid, Okla.
Saunders, Betty B., 66 Norwood Circle, Birmingham 4, Ala.
Thomas, Jane J., LaGrange, Mo.
Wakeman, Frances J., 510 Carmel Ave., Albany, Calif.

October 24, 1950

Alexander, Mr. Justin, 593 Riverside Dr., New York 31, N. Y.
Arav, Mr. Joseph J., 716 Williams Ave., Brooklyn 7, N. Y.
Babyak, Mr. Michael P., Box 373, Ellsworth, Pa.
DeSimone, Mr. John R., 105 Remington, Jamaica, N. Y.
Eisenberg, Mr. Joseph, 80 Arden St., New York, N. Y.
Goodman, Mr. Theodore, 691 Mt. Vernon Rd., Buffalo 31, N. Y.
Guyette, Mr. Henri, 242 E. 69th St., New York 21, N. Y.
Hartmann, Mr. Robert J., 540 E. 150th St., Bronx 55, N. Y.
Hofkosh, Mr. Jack M., 531 E. 5th St., New York 9, N. Y.
Kaiser, Mr. Samuel, 165 Butler, Buffalo 8, N. Y.
Keelan, Mr. Paul, 23 Oakwood Place, Elizabeth 3, N. J.
MacLean, Mr. Ian, 129 W. Delavan, Buffalo 13, N. Y.
Malek, Anne C., 85 Main St., Jewett City, Conn.
McAllister, Betty L., 319 W. 138th St., New York 30, N. Y.
O'Neill, Mr. Joseph R., 415 Sarah St., Osceola Mills, Pa.
Schleichkorn, Mr. Jacob S., 146 Hillside Ave., Jamaica 2, N. Y.
Treisman, Mr. Louis, 376 E. 8th St., Brooklyn 18, N. Y.
Villalobos, Mr. Medardo L., 122 E. Ormond, Oaklyn, Audubon, N. J.
Ward, Mr. Paul J., 3155 Weymouth St., Philadelphia 34, Pa.

October 26, 1950

Boyum, Mr. Virgil K., 131 W. Wilson St., Madison, Wis.
Clay, Alice B., 601 N. Pickering, Whittier, Calif.
Feldhaus, Mr. Daniel F., E. 2918 Wabash Ave., Spokane 14, Wash.
Ferguson, Janet L., 826 Wilfred Ave., Dayton 10, Ohio.
Galles, Elaine R., 1030 Chestnut St., Wisconsin Rapids, Wis.
Grisa, Mr. Arthur M., Rt. 2, Box 151, Gleason, Wis.
Hurry, Mr. Donald L., 71 Church St., Adams, N. Y.
Kehmeier, H. Louise, Box 41, Eckert, Colo.
Knapik, Mr. Bernard F., 89 Prospect, Binghamton, N. Y.
Konopisos, Mr. Andrew W., Box 23, Sunrise, Wyo.
Lonnborg, Mr. Kenneth F., 1726 N. 68th St., Milwaukee, Wis.
Meiselwitz, Mary H., 411 St. Paul St., Kiel, Wis.
Parker, Angeline, 913 E. Chilhowie Ave., Johnson City, Tenn.
Prior, Margaret M., P. O. Box 14, Delafield, Wis.
Rubnitz, Cecelia E., 130 Roedl Ct., Beaver Dam, Wis.
Perdue, Mr. Wayne H., 307 W. Ferguson, Charles City, Iowa.
Rhodes, Zora J., 211½ S. Marion, Washington, Iowa.
Vareka, Mr. Joseph J., 1343 Jenifer St., Madison, Wis.
Vaundry, Mr. Gordon A., 5504 Dorchester Ave., Chicago, Illinois.
Wasylenko, Mr. John T., 4 E. Prentiss, Iowa City, Iowa.
Wheeler, Mr. Donald J., 301 N. Lake St., Madison, Wis.

October 30, 1950

Alcock, Jane Carrol, 4852 Glacier Drive, Los Angeles, Calif.
Saxton, Edna M., 1811 Bush Street, Santa Ana, Calif.
Scott, Audrey Joyce, Route 7, Box 765, Modesto, Calif.
Lange, Nina Maren, 327 N. Comstock, Whittier, Calif.

October 31, 1950

Best, Miriam Elaine, 620 Scott Street, Wheaton, Illinois.

Donaldson, Roberta Ruth, 332 Ridgeland Ave., Elmhurst, Illinois.

Gorski, Dorothy Marie, 2037 W. 19th St., Chicago 8, Illinois.

Gould, Myrtle Theresa, 900 N. Lavergne, Chicago, Illinois.

Hogan, Elaine Therese, 401 N. Bentley Ave., Niles, Ohio.

Kennedy, Janet S. M., Lionsview Post Office, N. Vancouver, B. C., Canada.

Morrison, Patricia Ann, 7341 Coles Ave., Chicago 49, Illinois.

Smith, Mrs. Hazel G. U., Box 26, Gillette, Wyoming.

Walter, Grace Pirkey, 116 Dement Ave., Dixon, Illinois.

Wetmore, Marian Lee, 1427 W. Hutchinson, Chicago, Illinois.

Williams, Patricia Anne, 6416 N. Lakewood Ave., Chicago 26, Illinois.

Wiltgen, Rosemary Ann, 319 Grant Place, Park Ridge, Illinois.

Young, Helen Lucile, Box 114, Talent, Oregon.

Zimmerman, Mrs. Winifred M., New Troy, Michigan.

November 2, 1950

Behlen, Mr. Duane C., Center St., Palatine Bridge, N. Y.

Brown, Mary Louise, 1317 Johnstone Ave., Bartlesville, Okla.

Buch, Helen L., 8308 Roberts Rd., Elkins Park, Pa.

Dobbin, Helen M., N. Lane & Barren Hill Rd., Conshohocken, Pa.

Flake, Helen L., 144 W. Warr Acres, Oklahoma City, Okla.

Grover, Isabel B., 206 Clarke, Syracuse, N. Y.

Hanrahan, Mrs. Jane B., 5860 Spring Oak Dr., Hollywood 28, Calif.

Harcharufka, Marie T., 86 E. Market St., Wilkes Barre, Pa.

Jaspan, Mr. Melvin G., 5742 Addison St., Philadelphia, Pa.

Johnston, Mrs. Geraldine E., R. R. 2, Oxford, Ind.

Laux, Mr. Paul M., 309 Woodland Ave., Williamsport, Pa.

Mikovich, Marie, 301 W. Railroad St., Nesquehoning, Pa.

Miller, Mr. Edward J., 60 N. Clinton St., Doylestown, Pa.

Mumma, Anna M., 405 E. Cumberland, Lebanon, Pa.

Neiswender, Mr. Russell L., Sport Hill, Branchdale, Pa.

Porter, Grace K., 2302 W. 18th St., Wilmington, Del.

Radford, Jewell, 690 Juniper St., Atlanta, Ga.

Rudegeair, Mr. Clarence W., 406 W. Chestnut St., West Chester, Pa.

Stupka, Mr. Franklin J., 1508 S. Peninsula Dr., Daytona Beach, Fla.

Tachovsky, Elizabeth A., 1 Finady Ave., Bethlehem, Pa.

Thomas, Lucille A., 245 E. Goepp St., Bethlehem, Pa.

Williams, Mr. Erle L., 108 N. Salford St., Philadelphia, Pa.

Winneberger, Mr. William A., 5114 N. Sydenham St., Philadelphia 41, Pa.

Wookyhan, Sally A., R. D. 1, Newark, Del.

November 7, 1950

Brodrick, Alice V., 3000 Reisterstown Rd., Baltimore 15, Md.

Casella, Rosemarie M., 249 W. Park Ave., New Haven 11, Conn.

Chappell, Mr. Jesse E., 278 Weir St., Camas, Wash.

Fondacaro, Mr. Alfred P., 217 E. 114th St., New York, N. Y.

Hartman, Marion L., 56 W. Princeton Rd., Bala Cynwyd, Pa.

Huston, Mr. Wallace J., 16 Priscilla Lane, Schenectady, N. Y.

Jackman, Betty M., 230 9th St., McMinnville, Ore.

Jasnosz, Alice, 1160 E. 89th St., Brooklyn 12, N. Y.

Kray, Yvonne, 135 W. 78th St., New York, N. Y.

Lawn, Mr. George W., 721 W. Washington Ave., DuBois, Pa.

Magistro, Mr. Charles M., 64 Fourth Ave., East Orange, N. J.

Mandell, Joyce E., 948 Dana Ave., Cincinnati 29, Ohio.

McDonald, Mr. Albert A., 338 Cherry St., W. Reading, Pa.

Naimoli, Mr. Joseph J., 2502 Morgan Ave., Bronx 67, N. Y.

Phraner, Blandina V., 702 E. 19th St., Brooklyn, N. Y.

Proud, Mr. Paul P., 4 Exeter Ave., W. Pittston, Pa.

Pucine, Dolores A., 718 Eleanor Place, Utica, N. Y.

Raynsford, Helen J., 157 Harrington St., Bergenfield, N. J.

Silverstein, Naomi, 48128-14 Ave., Brooklyn, N. Y.

Smith, Charlotte T., Box 835, Jasper, Ala.

Turner, Gwendolyn E., 469 W. 104th St., New York, N. Y.

Wong, Hazel A., 92 Saddle Rd., Maraval, Port-of-Spain, Trinidad.

BOOK REVIEWS

TREATMENT IN PSYCHIATRY. Second Edition. By *Otkar Diethelm*, M.D., Professor of Psychiatry, Cornell University Medical College; Psychiatrist-in-Chief, The New York Hospital (Payne Whitney Psychiatric Clinic). Cloth. Price, $8.50. Pp. 546. Charles C Thomas, Publisher, 301-327 E. Lawrence Ave., Springfield, Ill., 1950.

This second edition should find a warm and ready welcome from both physician and surgeon. The evolution of psychiatric treatment has been quite marked along several lines during the past 12 years, and so it was necessary to make considerable change in this new edition. Valuable advances in psychotherapeutic methods not only for adults but also for children have been made during this period. A closer relationship with the other medical disciplines, especially with internal medicine and pediatrics, has been mutually fruitful.

The psychobiologic and psychopathologic basis for treatment is discussed in the introduction. In his excellent introduction, the author states: "This book attempts to do justice to the principle that we need to treat the patient suffering from a disease and not the disease entity. It is important, of course, to determine the illness from which the patient suffers, but it is no less vital to understand how the patient, as a personality, reacts to his illness, for the study of personality always opens up new avenues of procedure." The chapter on "Treatment in general" is full of therapeutic wisdom and should be read with profit by those into whose hands the responsibility for treatment rests. Although the author believes the only physical therapy needed is a limited form of hydrotherapy, this view hardly seems justified at least in institutional practice. Electrotherapy, he states, is without scientific justification, yet he advocates the use of electronarcosis; this is certainly an electrotherapeutic treatment. Dr. Diethelm believes that best results are obtained when the internist and the surgeon have sufficient knowledge to recognize and treat personality disorders.

The author presents the outstanding factors in suggestion and their significance in treatment in the chapter on suggestion and hypnosis. Other significant chapters are The Action of Various Physical and Chemical Agents, which includes hydrotherapeutic procedures; Psychotherapeutic Procedures, containing an illuminating discussion on child psychotherapy; Psychiatric Disorders with Cerebral Damage, in which the value of fever therapy, the treatment of choice, is discussed in the treatment of general paresis. The author believes the infection of choice is benign tertian malaria transferred from patient to patient. It is his opinion that artificial fever induced by physical means is not nearly so effective. For the control of epileptic convulsions the author states that diphenylhydantoin (dilantin) sodium is an excellent drug. There are also chapters discussing psychoneurosis, stuttering, sexual difficulties, drug addiction and problems in general practice. The final chapter of the book is evaluation of current progress and trends, in which the author evaluates the most recent forms of treatment, such as group psychotherapy, convulsive therapy, insulin treatment, surgical procedures on the brain and rehabilitation in convalescent and chronic cases.

This book is written in a masterful manner, and the wisdom of the writer garnered through many years of practice and teaching permeates the entire volume. This scholarly treatise should be in the hands of every physician and surgeon. Physiatrists should find this volume of inestimable value, and it is highly recommended.

CEREBRAL PALSY. By *John F. Pohl*, M.D., Orthopedic Surgeon, Michael Dowling School for Crippled Children, Minneapolis, Minnesota. Cloth. Price, $5.00. Pp. 224 with illustrations. Bruce Publishing Company, St. Paul, Minn., 1950.

Cerebral Palsy is slowly but surely receiving the attention it deserves. The number of victims is appalling. Except for a few pioneers, the medical profession has not been sufficiently interested. Too frequently, too many persons in medicine have had the idea as well expressed by the author in his preface, "The question has often been asked whether the final results justify the time and effort spent in treating this condition." As an answer he quotes William Little as follows: "I have had many cases under observation from one to twenty years and may mention as an encouragement to other practitioners that treatment based upon physiology and rational therapeutics, affects an amelioration surprising to those who have not watched such cases. Many of the most helpless have been restored to considerable activity and enjoyment of life."

This small book emphasizes treatment. A short opening chapter deals with the general problem of cerebral palsy, pathology, types, possible etiological factors and certain clinical features. The basic approach of his method of treatment is relaxation and the voluntary control of muscles not affected by the brain injury. Detailed instructions are given for the various muscle groups in order "to establish in the nervous centers an awareness of the individual muscle." Each group is considered under these headings, "muscle consciousness, muscle function and coordination." A chapter on developmental patterns and walking em-

ploy somewhat these same principles. This concept of treatment differs from another method that has received considerable notoriety of late. These differences of opinion usually result in advancing the care of patients. Cerebral patients certainly need this. Chapters on speech therapy and occupational therapy are included and are very good.

This is not a complete book neither on the clinical features of cerebral palsy nor on all the many types of therapy; that is intentional. It has many suggestions and ideas that should be particularly helpful for all persons working in physical medicine.

PLASMA CLOT SUTURE OF PERIPHERAL NERVES AND NERVE ROOTS—RATIONALE AND TECHNIC. By *I. M. Tarlov*, M.D., Associate Professor of Neurosurgery, New York Medical College, New York City. Cloth. Price, $5.50. Pp. 116, with 47 illustrations. Charles C Thomas, 301-327 East Lawrence Avenue, Springfield, Illinois, 1950.

For those who wish to keep in touch with the latest developments in order to have a broad foundation for his specialty this small volume by Tarlov will have great appeal. It brings together in concise form details contained in a long series of publications by the author and adds new information on the subject. The author believes that the formation and suture of cable grafts are facilitated by the use of plasma. This newer technic avoids much of the damage to the delicate strands of the cable that is apt to occur when thread sutures are used. Sufficient present evidence points to the advisability of the plasma clot method of suturing peripheral nerves, nerve grafts and nerve roots.

The book contains the following chapters: the need for an improved nerve suture technic; the basis for selecting the most suitable type of plasma for nerve suture; preparation of nerve stumps for suture; necessity for using a mold to suture nerves with clot; tantalum wire tension sutures combined with plasma clot; suture of the nerve stumps by plasma clot; suture of nerve grafts; suture of the cauda equina nerve roots; the place of plasma clot suture in repertory of the neurosurgeon. The volume closes with an excellent bibliography.

Of special interest to the physiatrist is the author's evaluation of physical therapy in the after care of these neurosurgical patients. The physiatrist will also find the standard objective method for the estimation of nerve recovery of distinct value. Tarlov outlines the assessment for sensory and motor recovery as outlined by the Medical Research Council of Great Britain. This book is written in clear, concise and understandable language. This volume while written for the surgeon should find a ready audience among physiatrists because physical medicine is so intimately connected with neurology.

FREUD: DICTIONARY OF PSYCHOANALYSIS. Edited by *Nandor Fodor* and *Frank Gaynor*, with a preface by *Theodor Reik*. Cloth. Price, $3.75. Pp. 208. Philosophical Library, Inc., 15 E. 40th St., New York 16, 1950.

The authors have gone through the writings of Freud and culled sentences here and there that bear on certain key words. The latter are arranged alphabetically. Right here any resemblance to a dictionary ends! Some of the "definitions" are delightful:

SYMPTOM — The symptom has its origin in the repressed, it is as it were the representative of the repressed in relation to the ego; the repressed is a foreign territory to the ego, an internal foreign territory, just as reality is — you must excuse the unusual expression — an external foreign territory. . . .

WOMAN — . . . the female sex, the sex certainly more predisposed to neurosis. . . . and so forth, ad infinitum ad nauseam!

The Freudians constantly complain that much of the supposed Freudiana is a cumbersome superstructure built up by persons who misunderstood the master and that therefore it is unfair to hold Freud responsible for all that is disseminated in his name. This little book makes it abundantly clear that the master himself has plenty to answer for!

TEXTBOOK OF ANATOMY AND PHYSIOLOGY. By *Catherine Parker Anthony*, B.A., R.N., Instructor of Anatomy and Physiology, Lutheran Hospital, Cleveland, Ohio; Formerly Instructor of Anatomy and Physiology, St. Luke's Hospital, and Assistant Instructor of Anatomy and Physiology, Frances Payne Bolton School of Nursing, Western Reserve University. Third Edition. Cloth. Pp. 614, with 208 illustrations including 16 color plates. Price, $4.00. The C. V. Mosby Company, 3207 Washington Blvd., St. Louis, Missouri, 1950.

This book was written for the student nurse. In this edition the author has provided additional information on physiology, since a clear understanding of anatomy requires a knowledge of its basic principles. She has attempted to furnish only essential facts which in itself is a difficult accomplishment in dealing with two sciences each embodying a tremendous amount of material. There are many aids to learning such as summarizing tables, outline surveys at the beginning, and full outline summaries and review questions at the end of each chapter.

The anatomical consideration of bones, muscles and nerves is superficial. Although there are several drawings, illustrations and charts for the presentation of the material, an adequate description is lacking. The text on these tissues is limited to the physiological aspect. There are no diagrams of topography nor of intrinsic structures of the hand. Such anatomical treatment may be considered adequate for the student nurse. It fails, however, to meet the requirements for the physical therapist.

ATLAS OF HUMAN ANATOMY. Vol. I. and Vol. II. By *M. W. Woerdeman*, M.D., F.R.N.A., Sc., Professor of Anatomy and Embryology and Director of the Department of Anatomy, University of Amsterdam. Cloth. Price, Volume I, $10.00 and Volume II, $8.00. Volume I, 512 plates; Volume II, 642 plates. The Blakiston Company, 1012 Walnut Street, Philadelphia 5, Pa., 1950.

Anatomy is of such vital importance to the physiatrist and physical therapist that a good atlas of anatomy is always welcome. These two extensive volumes by Professor Woerdeman are unusually good.

The author states his main guiding principle has been that each separate plate should be a true representation of its physical counterpart. All details, including those visible only by means of a lens, have been accurately reproduced in the plates. The figures are not all drawn from dissections of one side of the human body, but both left and right organs are illustrated. Colored reproductions are at a minimum but used whenever essential.

Volume one composes the entire locomotor apparatus, osteology, articulations and musculative. There are 512 plates in this volume.

Volume two composes the digestive, respiratory, urogenital, circulatory, and the nervous systems and sense organs. Special attention has been given to dental anatomy thus making the atlas of special value for anatomy classes in dental schools.

Included in the section of respiratory anatomy are several excellent bronchograms. The terminology of the bronchopulmonary segments of both Professor Huizinga and the International Committee selected to consider bronchial nomenclature is given.

The author has no special section for the endocrine glands because it is usual to study them with the section under dissection, for instance, the thyroid is usually studied when dissecting the larynx under the respiratory system.

Also for practical considerations there is no special section for haemopoietic organs. Tonsils and spleen for example are shown with the digestive system.

Professor Woerdeman has presented the very difficult subject matter of neuroanatomy in a masterful manner. What to include and omit was no small task. Only those details that could be viewed with the naked eye or small magnifying glass has been included while the most important nervous pathways are shown in diagrams. This section will be invaluable. There are 642 plates in volume two.

Both the publisher and author are to be congratulated on producing such an unusual work of art. The medical profession should welcome both volumes wholeheartedly. The plates are of an unusual quality and one almost gets the idea of a third dimension when viewing them. Both volumes are highly recommended.

SPEECH PROBLEMS OF CHILDREN. Edited by *Wendell Johnson*, Ph.D. Prepared for the National Society for Crippled Children and Adults by the American Speech and Hearing Association. Cloth. Pp. 261. Price, $3.75. Grune & Stratton, Inc., 381 Fourth Ave., New York 16, 1950.

As a help to parents, physicians, teachers and others concerned with school children affected by speech problems, several leading speech correction workers and pathologists have collaborated in writing "Speech Problems of Children," a guide to care and correction.

Written in language easily understandable to the layman, the book contains chapters on the major speech disorders, with each chapter written by a different authority. In addition, the chapters were read by at least two other authorities in each field and editorial revisions were made on the basis of their suggestions.

To help bring this training to the children who need it, the association, which is the professional organization of speech and hearing correctionists, prepared the book for the National Society for Crippled Children and Adults.

The book is edited by Wendell Johnson, Ph.D., director of the speech clinic at State University of Iowa. Chapters cover a broad survey of the problem, speech in the home and speech in the school, children who "don't talk plain," children who are slow in learning to speak, children with cleft lip and cleft palate, children with cerebral palsy, children with voice disorders, children with hesitant speech, children of foreign tongues and children with impaired hearing.

PHYSICAL MEDICINE ABSTRACTS

Electromyographic Patterns in Reinnervated Muscle. Melvin D. Yahr; Ernst Herz; Joseph Moldaver, and Harry Grundfest.

Arch. Neurol. & Psychiat. **63**:728 (May) 1950.

Extensive reports are available concerning the action potentials occurring in normal and denervated muscles. A few investigators have reported the electromyographic changes during the process of reinnervation following section and suture of peripheral nerves. These reports have been confined to a relatively short period following the suture. A study of the action potentials in 76 cases of reinnervated muscles three to five years after suture of the peripheral nerve is presented. Two outstanding electromyographic patterns were recorded in these muscles: (a) a combination of spontaneous action potentials and small motor unit discharges on effort, and (b) large spike potentials, ranging in amplitude from 3 to 15 millivolts, occurring with volitional contraction and having the characteristics of motor unit discharges.

A correlation of the electromyographic changes and the anatomic characteristics of reinnervated muscle is suggested, namely, that the motor units responsible for the large potentials contain a larger than normal number of muscle fibers.

Use of Curare in Treatment of Anterior Poliomyelitis. A. G. Bower; O. L. Huddleston, and D. Hovsepian.

Am. Med. **8**:137 (Feb.) 1950.

The treatment employed by Bower and associates consisted in administering curare in the form of purified Chondodendron tomentosum extract (intocostrin) in doses of 0.9 to 1.5 units per kilogram of body weight two or three times daily. Physical therapy consisted in passive stretching combined with or followed by active assistive exercises for 20 to 40 minutes following each injection. The effect of the drug and physical therapy was observed on 40 patients. Response to this therapy was most satisfactory when treatment was begun within two to six days after the onset of muscle involvement. Patients showing a combination of severe muscle tightness and weakness were less likely to be benefited by curare than those showing muscle tightness alone. Patients with extensive paralysis and weakness were not greatly benefited by the curare therapy. Localized pain, tenderness and soreness of the soft tissues in and about the joints were observed in 6 patients, but insufficient data are available to state definitely that these symptoms were caused by purified Chondodendron tomentosum extract injections. The muscle tightness of some patients who were refractory to pack therapy was relieved by the drug and physical therapy. A few patients were refractory to either hot packs or curare therapy, as well as to a combination of these two. Curare was helpful in treating some patients who had to be placed in the respirator. Of the 10 patients who received curare during treatment in the respirator, 4 made a satisfactory recovery. The drug was most valuable in the early phases of disease in patients not coordinating their breathing with the respirator. It stopped aberrant irregular impulses from coming through to the intercostals and diaphragm, and the patient's breathing assumed the rhythm of the respirator. Relief of laryngeal and intercostal tightness by purified Chondodendrom tomentosum extract saved at least 1 patient and possibly 2 more from asphyxiation.

Lack of Regeneration in Spinal Cord of Rat. John W. Barnard, and Wallace Carpenter.

J. Neurophysiol. **13**:223 (May) 1950.

Regeneration in the mammalian central nervous system sufficient in amount to be demonstrated physiologically as well as morphologically has long been a goal. In 1940 Sugar and Gerard reported success on this problem in young rats. Prior to this time workers had reported only abortive attempts at regeneration in rats and other mammals. Since 1940 Clark in rabbits, Brown and McCouch in cats and dogs, and Davidoff and Ransohoff in cats have reported only feeble regenerative powers similar in amount to that found by the earlier authors. It seemed advisable to try to repeat the work of Sugar and Gerard on rats, since both the theoretical and the practical implications of their work are of such great importance.

The spinal cord of 159 rats was cut across in the midthoracic region. The cord ends were completely visualized to ensure complete transection. Fresh sciatic nerve, degenerated sciatic nerve and muscle were both auto- and homo-transplanted into the gap between the cord ends in various groups of animals. A tantalum cuff or cylinder was inserted over the cut cord ends in another group. The animals were kept alive for varying periods up to 168 days. No return of function was found beyond that of a "spinal" animal.

Silver-stained sections of the spinal cord showed no evidence of any but the feeblest sort of regeneration. An exception to this was the invasion of the scar tissue by root fibers.

Connective tissue invaded the space between the cord ends but so feeble was the regenerative impulse that it was felt that the presence of the connective tissue was not of primary importance.

Effect of Bulbar Facilitation and Inhibition on Peripheral Reflex Inhibition. L. M. N. Bach.

J. Neurophysiol. **13**:259 (May) 1950.

The present investigation was carried out with the purpose of determining whether bulbar facilitation and inhibition, being effected by these spinal tract mechanisms, would oppose or enhance reflex inhibition of peripheral origin. It was hoped that such information would aid in determining the point of effectiveness of the involved bulbospinal tracts in the reflex arcs studied.

In anesthetized cats, studies were carried out on the effect of the bulbar inhibitory and bulbar facilitatory systems on reciprocal inhibition as recorded by the actions of the biceps-quadriceps and the tibialis-gastrocnemius pairs in response to ipsilateral or contralateral sensory nerve stimulation. Additional studies were made on the effect of these systems in ipsilateral sensory nerve inhibition of the recurrently elicited knee-jerk.

Stimulation of the bulbar facilitatory system enhances both the excitatory and inhibitory components of reciprocal inhibition but activation of the bulbar inhibitory mechanism abolishes both of these phases. In the case of reflex inhibition of the knee-jerk, bulbar inhibition sums with and bulbar facilitation opposes the effect. These results are explained on the basis that the spinal projections of the bulbar facilitatory and inhibitory systems influence the involved spinal reflex arcs at some early synapse in the arc.

Red Fluorescence of Urine in Wood's Light as Aid in Office Diagnosis of Porphyria. I. Zeligman.

Arch. Dermat. & Syph. **61**:853 (May) 1950.

Examination of urine in Wood's light should be used as an office procedure in cases of suspected porphyria. Porphyric urines were found to exhibit red fluorescence, whereas normal urines characteristically showed greenish blue or greenish yellow fluorescence, in Wood's light.

Medical Rehabilitation of the Physically Handicapped. Murray B. Ferderber.

Pennsylvania M. J. **53**:473 (May) 1950.

The busy practitioner is concerned chiefly with the physical care of his patients, first with prevention and diagnosis, and second with definitive medical care. The first two phases of practice will run in certain stated lines, but a "third phase" is concerned with the restoration of the handicapped to the fullest physical, mental, social, vocational and economic usefulness of which they are capable.

The author has attempted to demonstrate the following criteria for medical rehabilitation: All hemiplegics are not permanently disabled; simplicity and economy of mechanical devices will assist in the rehabilitation of such cases; common shoulder injuries are frequently and incorrectly diagnosed and the treatment of such disabilities follows definite lines; early ambulation, a form of rehabilitation, prevents the deconditioning process. It is the obligation of the physician wherever possible to direct and lead his patient from the point of injury or illness to the final phase of physical restoration — his job.

Treatment of Poliomyelitis with Phenosulfasole. R. L. Whelton; E. R. Caldwell, Jr.; M. H. Lepper, and others.

J. Pediat. **35**:401 (Oct.) 1949.

Whelton and co-workers treated 66 patients with acute poliomyelitis at the Isolation Division of Gallinger Municipal Hospital in Washington, D. C. Thirty-two patients were given N (2-thiozolyl phenol sulfonamide (phenosulfazole) in isotonic solution of sodium chloride intravenously supplemented by phenosulfazole in tablets by mouth. The remaining 34 patients were observed as controls. Injections of isotonic sodium chloride or 5 per cent dextrose solution were given intravenously and placebo tablets made of dextrose were given orally. The two groups of patients were comparable with regard to the duration of the illness, the presence of paralysis and the cerebrospinal fluid findings on admission. There was no appreciable difference in the outcome in the two groups. No toxic effects were observed in the patients treated with phenosulfazole. Phenosulfazole had no effect on the clinical course of acute poliomyelitis.

Simultaneous Bilateral Rupture of the Quadriceps Tendon. Charles A. Steiner, and Louis H. Palmer.

Am. J. Surg. **68**:752 (Nov.) 1949.

Although numerous articles have appeared in the literature describing muscle and tendon tears, relatively few of these refer to involvement of the quadriceps tendon. Furthermore, nearly all of the reported cases of quadriceps tendon rupture are of the unilateral variety while the bilateral type is extremely rare.

Postoperatively, the patient's course in the hospital was uneventful and both incisions healed by primary intention. Penicillin therapy was begun on admission and continued for five days postoperatively. Guarded active and passive motion of the knee joints was begun on the fourteenth postoperative day. A brief review of the incidence and of the mechanism of quadriceps rupture is presented.

Fatigue and Neuromuscular Block in Mammalian Skeletal Muscle. G. L. Brown, and B. D. Burns.

Proc. Roy. Soc. Med., Series B **136**:182 (June 23) 1949.

The tetanic tension developed by a muscle, excited through the motor nerve with repeated maximal stimuli, declines as stimulation continues. Provided

that the stimulation is not unduly prolonged or of too high a frequency, the decline in tension is reversible, and repetition of the same stimulation produces the same tension changes. Stimulation of a mammalian nerve-muscle preparation for some two hours at frequencies as low as one in ten seconds admittedly produces a series of twitches whose peak tensions gradually decline, but this fall of tension is not reversible within the limits of an acute experiment. In this paper the meaning of the term "fatigue" is restricted; it will be taken to imply a decline in tetanic tension which is reversed by allowing the muscle to rest for about 10 minutes.

Systemic Thermotherapy: With Special Reference to Hot-Air Baths. Victor R. Ott.

Brit. J. Phys. Med. **13**:9 (Jan.) 1950.

Apart from warm water and from the radiant heat emitted by a fire, hot air is probably the oldest means of heating the human body. During a long period, the scientific basis of this therapeutic procedure did not find much interest on the part of the medical profession, although the basic problems had been clearly realized as long as 174 years ago.

With reference to his investigations on the Finnish hot-air bath, the author discusses the physiologic and pathophysiologic bases of systemic heat treatment. The most important aspect of the physiologic effects of systemic heat treatment is its influence upon the tonic level of the whole autonomic nervous system, not only of the sympathetic or parasympathetic alone: that is to say, that an "amphotonic" autonomic reaction is produced by physical hyperthermy.

This theory explains the well-known fact that the individual condition of the patient is broadly decisive in regard to the effects of systemic physical treatments; it also explains the many contradictions of experimental observations of different functions and in different patients.

Value of Electromyography in Clinical Neurology. Frank Sargent.

Lancet **6612**:937 (May 20) 1950.

The application of electromyography is limited to the lower motor neurones and voluntary muscles.

Seventeen neurological cases have been presented to illustrate the uses of electromyography. No mention has been made, for instance, of myopathy, in which the mechanical inefficiency, coupled with normal, electrical reactions but short-period potentials, renders the electromyograph an invaluable means of distinguishing this disorder from those of myelogenic or neurogenic origin; nor has myasthenia gravis been included, although electromyography is now regarded in some countries as an indispensable method of assessing the severity of the disease (rapid fatigue can be measured in this way with a degree of accuracy impossible by clinical methods alone). But the variety of diseases represented will, it is hoped, indicate that electromyography can no longer be regarded as of purely academic interest, with no clinical value.

It has been stated already that the method is still in its infancy. For this reason it is more than ever desirable to correlate the clinical condition with the electrical findings. When patients have been sent for electromyography it would be appreciated if the follow-up scheme could be made to include a note on progress for the electrodiagnostic department concerned; it is only by means of such information that obscure electrical phenomena can be understood and correctly interpreted.

Objective Testing of Vision with Use of the Galvanic Skin Response. Henry N. Wagner.

Arch. Ophth. **43**:529 (March) 1950.

In the experiments reported here, the aim is to outline a simple technic for the objective testing of vision. This technic has been found useful as an aid in the diagnosis of psychogenic factors or of malingering in visual defects in man, whether the defects are present as a failure of visual acuity or as a limitation of the visual field, and, with modifications, can also be used for the study of vision in animals. With the use of the conditioned galvanic skin response, and, in the case of animals, the catalepsy-producing drug bulbocapnine, an attempt has been made to present a technic for the objective testing of vision in man, monkey, cat and rat.

Collateral Circulation, Natural and Artificial. James Learmonth.

Surg. Gynec. & Obstet. **90**:385 (April) 1950.

In order to avoid, to diminish, or to correct ischemia the clinician must try to arrange: (1) that as much blood as possible reaches the arterioles, by keeping the arterial main and terminal branches dilated, and (2) that the arterioles are kept widely dilated, to increase the amount of blood reaching the capillaries.

When arterial obstruction is of slow evolution, enlargement of pre-existing collateral channels may keep pace with the gradual narrowing of the original channel, provided that the needs of the tissues are not increased by increased calls upon their physiologic activity.

General measures include rest, which reduces the metabolic needs of the part, and the avoidance of local heating, which increases them.

The nonoperative methods for dilating arterial branches fall into two groups. First, peripheral vasodilatation may be produced reflexly by heating areas of the body other than the threatened part at a temperature of about 45 C.; and second, it may be induced by the action of drugs. Both of these methods have the disadvantage that widespread vasodilatation leads to a fall in peripheral resistance and so to a fall in aortic blood pressure, which is undesirable because it must be compensated for by increase in cardiac output by

increase in pulse rate, if peripheral volume flow is to be maintained at a high level.

It was found that peripheral vasodilatation may be continuously maintained, with least inconvenience to the patient, by the use of electrically heated gloves.

The physics of the arterial circulation before and after obstruction of a main artery is described. The task of a collateral circulation is to carry blood to the capillaries in quantity and at a high pressure. This is best accomplished when the alternative routes return blood to the main arteries distal to a block. General measures to encourage collateral circulation include rest, anticoagulant drugs, and avoidance of local heat to the ischemic part. The collateral circulation may be encouraged artificially by reflex vasodilatation, by drugs, or by operation. The advantages and disadvantages of each of these methods are discussed.

Leukoplakia Buccalis. Onis G. Hazel; George W. Charles, and Louis E. Diamond.

Arch. Dermat. & Syph. **61**:781 (May) 1950.

The dermatologic literature abounds with reports of leukoplakia buccalis. Many have written on electrogalvanism in the mouth, but few have stated that they have observed cases of leukoplakia due to electrogalvanism in the mouth. The reports of Hollander, Ullman, Vilanova, Touraine and Blandouin, Lain and Caughron, Fitzwilliams and others who stated that they had studied cases of leukoplakia due to electrogalvanism have not appeared conclusive to the authors.

Only those cases of clinical leukoplakia that were confirmed by a microscopic diagnosis have been considered to be true leukoplakia. This requirement eliminated 3 cases of lichen planus limited to the oral cavity and cases that seemed to be more compatible with senile changes than with true sharply marginated leukoplakia. This report is based on 15 cases of leukoplakia.

Measurable electromotive forces exist in the mouth in the presence of dissimilar metals, and there is a continuous flow of current between such restorations. The magnitude of the electric current is too small to produce any appreciable direct damage to the tissues in the mouth. The presence of abnormally large amounts of silver in four samples and of cadmium in one sample seems to indicate that metallic ions from dental restorations are deposited in tissue in the oral cavity. Patch tests made by local application of tenth-normal solutions of zinc acetate and nickel acetate suggest an altered reactivity of the tissue or an allergic reaction in 2 of the cases studied.

The probability that altered reactivity, or allergic reaction, to metallic ions from the dental restorations will explain many of the subjective and objective symptoms of previously so-called electrogalvanic lesions seems reasonable. Altered reactivity to metallic ions from dental restorations is one possible etiologic factor in leukoplakia buccalis.

Metatarsus Adductovarus — "Skewfoot." Donald W. McCormick.

J. A. M. A. **141**:449 (Oct. 15) 1949.

Metatarsus adductovarus, or skewfoot, is a clinical entity which is now more prevalent in this country than clubfoot. Untreated skewfoot may persist as an annoying deformity with hallux valgus, bunion, flatfoot and chronic foot strain. Adequate early and persistent manipulative treatment with casts will completely correct the moderate deformity. Follow-up by clinical and roentgen examination is important. Severe or untreated skewfoot in the older child requires operative treatment for adequate correction.

Newer Knowledge on the Pathogenesis of Poliomyelitis. Claus W. Jungebult.

J. Pediat. **37**:109 (July) 1950.

The suggested mechanism for the pathogenesis of poliomyelitis is based upon a concept which stands in stark opposition to earlier beliefs according to which the disease should be regarded as an essential and primary affection of the central nervous system. However, the weight of the evidence presented in this review makes such a viewpoint less and less tenable and tips scales heavily in favor of adopting a cautious and critical attitude. An understanding of poliomyelitis, in the past, has been hampered too much by a lack of precise information. Actually, the history of this disease has been marked by periods of violent disagreement among scientific workers and by sharp dissension within the ranks of the medical profession. The subject is of keen interest to clinicians and laboratory workers alike and progress will be measured by the extent of cooperation in between the two. Until the final word has been said, it is to be hoped that, in the future, students of poliomyelitis will preserve an open mind and maintain an open door in their efforts to unravel the mysteries of this baffling disease.

Treatment of Acute Gouty Arthritis with Pituitary Adrenocorticotropic Hormone (ACTH). H. M. Margolis, and Paul S. Caplan.

J. A. M. A. **142**:256 (Jan. 28) 1950.

This report describes the striking beneficial results of therapy in 2 cases of acute gouty arthritis treated with single injections of pituitary adrenocorticotropic hormone (ACTH).

Unlike the therapeutic problem in rheumatoid arthritis, in which long-continued administration of cortisone or pituitary adrenocorticotropic hormone is required, the acute gouty episode in these 2 cases was terminated by a single dose of 50 mg. of the latter. This fact is of considerable practical importance, because the possible dangers from undesirable side effects of long-continued administration of the agent are absent. There is reason to believe that gout is one disease in which pituitary adrenocorticotropic hormone may terminate the acute, disabling episode.

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The letters used to explain in which department the matter indexed appears are as follows: "E," Editorial; "C," Correspondence; "ab," abstracts; the asterisk (*) indicates an original article in the ARCHIVES.

This is a subject index and one should, therefore, look for the subject word, with the following exceptions: "Book Reviews" and "Deaths," are indexed under these titles at the end of the letters "B" and "D." The name of the author, in brackets, follows the subject entry.

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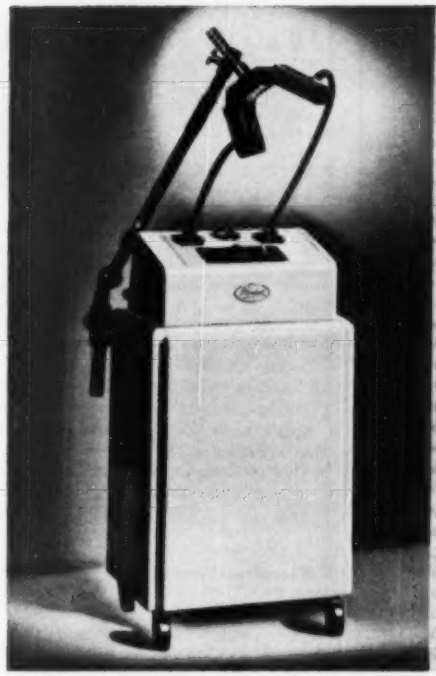
PHYSICAL MEDICINE **

The following services are approved by the Council on Medical Education and Hospitals of the American Medical Association and the American Board of Physical Medicine and Rehabilitation. Residencies in this specialty have been approved without specifying the number of years for which they are accredited. The Board will give appropriate credit for training in these hospitals on an individual basis.

Hospitals, 42 Assistant Residencies and Residencies, 55

Name of Hospital	Location	Chief of Service	Inpatients Treated	Number of Treatments	Asst. Res. & Residencies Offered §	Beginning of Service (1950)	Beginning Stipend (Month)
United States Army							
Letterman General Hospital★	San Francisco	A. E. White	21,861	180,112	2	1/1, 7/1	n
†Fitzsimmons General Hospital★	Denver	H. B. Luscombe	21,090	281,586	4		n
Army Medical Center★	Washington, D. C.	E. M. Smith	8,676	134,137	6	7/1	n
Veterans Administration							
†Veterans Admin. Hospital ¹	Ft. Logan, Colo.	F. J. Fricke	4,610	58,879	1		n
Veterans Admin. Hospital	Chamblee, Ga.	G. D. Williams	4,923	39,181	1	7/1	n
Veterans Admin. Hospital	Hines, Ill.	L. B. Newman	20,052	472,950	3	1/1, 7/1	n
Veterans Admin. Hospital	New Orleans	S. Winokur	1,107	49,815	1	7/1	n
Veterans Admin. Hospital ¹	Framingham, Mass.	F. Friedland	9,000	24,000	2	7/1	n
Veterans Admin. Hospital ¹	Jefferson Bks., Mo.	S. Mead	4,046	53,920	2	7/1	n
†Veterans Admin. Hospital ¹	New York City	K. Harpuder	12,613	279,817	3	1/1, 7/1	n
Veterans Admin. Hospital ¹	Cleveland	H. T. Zankel	2,452	105,000	2	7/1	n
†Veterans Admin. Hospital	Aspinwall, Pa.	S. Machover	1,993	62,792	1	7/1	n
†Veterans Admin. Hospital	Portland, Ore.	E. W. Fowlks	4,395	96,786	1	1/1, 7/1	n
Nonfederal							
Los Angeles County Hospital★¹	Los Angeles	O. L. Huddleston		133,694	1	Varies	$165.00
White Memorial Hospital★	Los Angeles	F. B. Moor	33,606				120.00
Stanford University Hospitals★¹	San Francisco	W. H. Northway		6,833		7/1	50.00
University of Colorado Medical Center Colorado General Hospital★¹	Denver	H. L. Dinken	3,322	25,088	1	7/1	75.00
†Emory University Hospital★	Emory Univ., Ga.	R. L. Bennett	9,848	20,266	1	7/1	50.00
†Georgia Warm Springs Foundation	Warm Springs, Ga.		889	1,108	2		
Cook County Hospital★¹	Chicago	D. Kobak	3,357	33,282		1/1, 7/1	
Michael Reese Hospital★¹	Chicago	C. O. Molander	1,007	19,443	1	Varies	25.00
Northwestern University Medical School	Chicago		13,284	34,813			
University of Kansas Medical Center★	Kansas City, Kan.	D. L. Rose	11,684	31,838	1	7/1	100.00
†Massachusettts General Hospital★	Boston						
University of Minnesota Hospitals★¹	Minneapolis	M. Knapp	15,391	21,885	4		105.00
Mayo Foundation	Rochester, Minn.	F. H. Krusen			9	Varies	92.50
Barnes Hospitals★	St. Louis		820	10,951		7/1	25.00
†Bellevue Hospital, Div. III— New York University★	New York City						
Goldwater Memorial Hospital★¹	New York City		2,799	134,357			
†Hospital for Joint Diseases★¹	New York City	J. Weiss	76,070	93,036	1	7/1	40.00
Hospital for Special Surgery	New York City	K. G. Hansson		41,111			
Montefiore Hosp., for Chronic Diseases★	New York City	K. Harpuder					
Mount Sinai Hospital★	New York City	W. Bierman				7/1	50.00
New York City Hospital★¹	New York City	F. K. Safford, Jr.	955	26,418			
†Presbyterian Hospital ★¹	New York City	W. B. Snow	70,406	191,021	2	1/1	41.66
St. Luke's Hospital★	New York City	R. Muller	1,702	126,804	1	7/1	50.00
†Rehabilitation Hospital ¹	W. Haverstraw, N. Y.	M. Hoberman	322	291,115	1		200.00
Cleveland Clinic Hospital ¹	Cleveland	S. G. Gamble	17,885	17,884	1	7/1	135.00
Hospital of the Univ. of Pennsylvania★¹	Philadelphia	G. M. Piersol	1,396	15,575	1	Varies	100.00
Philadelphia General Hospital★¹	Philadelphia		3,073	21,769			
Medical College of Virginia, Hosp. Div.★	Richmond, Va.	F. A. Hellebrandt	3,787	34,009			
State of Wisconsin General Hospital★¹	Madison, Wis.	H. D. Bouman	3,783	45,840			

The star (★ indicates hospitals approved for training interns.
The dagger (†) indicates temporary approval.
¹ Residencies open to women.
§ Includes Fellowships.
n Salary established by government pay tables.
** Reprinted in part J. A. M. A. 142:1185 (April 15) 1950.



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MEETINGS OF INTEREST TO THOSE IN THE FIELD OF PHYSICAL MEDICINE

In this column will be published information about meetings of interest to those in the field of physical medicine. New data should be sent promptly to the office of the ARCHIVES, 30 North Michigan Avenue, Chicago 2, Illinois.

American Congress of Physical Medicine. — 29th Annual Session, Shirley-Savoy Hotel, Denver, Colo., Sept. 4, 5, 6, 7, 8, 1951. Walter J. Zeiter, M.D., Chairman, Convention Committee, 30 North Michigan Ave., Chicago 2.

New Jersey Society of Physical Medicine. — Meetings, fourth Wednesday. Bror S. Troedsson, M.D., President, Orange Memorial Hospital, Orange, N. J.

New York Society of Physical Medicine. — Meetings, first Wednesday. Madge C. L. McGuinness, M.D., Secretary, 48 E. 62nd St., New York 21, N. Y.

Pennsylvania Academy of Physical Medicine. — Meetings, third Thursday. Herman J. Bearzy, M.D., Secretary, 289 N. Maple Ave., Lansdowne, Pa.

Section on Physical Medicine and Rehabilitation of the American Medical Association. — Wednesday, Thursday and Friday morning of the A.M.A. meeting (June 11-15, 1951) in Atlantic City. Secretary, Walter J. Zeiter, M.D., Cleveland Clinic Foundation, 2020 E. 93rd Street, Cleveland 6, Ohio.

Chicago Society of Physical Medicine and Rehabilitation. — Meetings, fourth Wednesday, January, through May, 1951. Next meeting Wednesday, January 24, Loyola University Medical School, 706 South Wolcott Ave., Chicago, 8 P. M., Lecture Room A. Arthur A. Rodriquez, M.D., Secretary, 30 North Michigan Ave., Chicago 2. *See detailed announcement elsewhere, this issue.*

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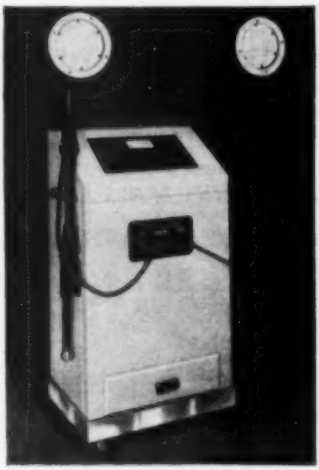

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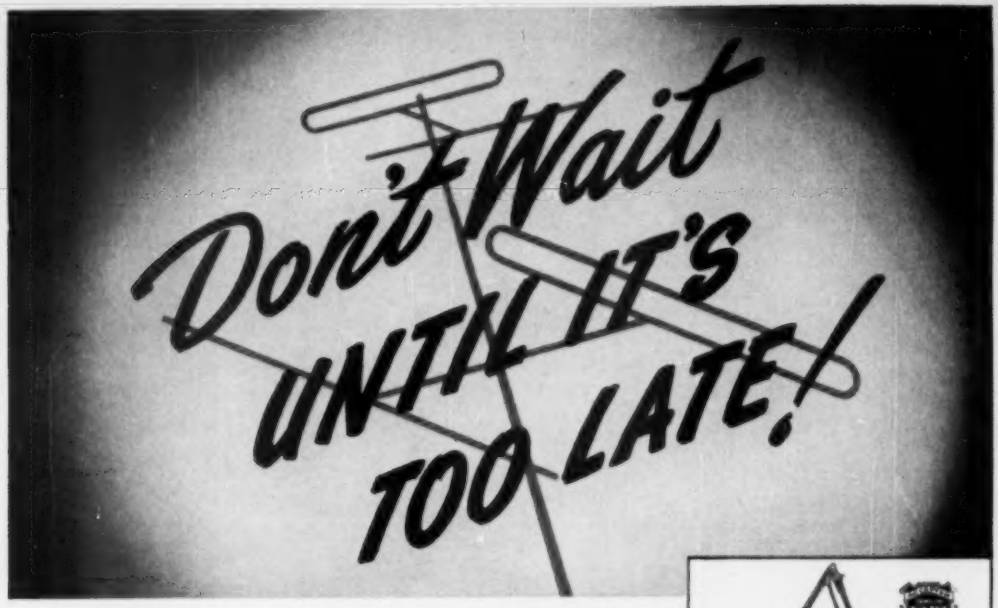

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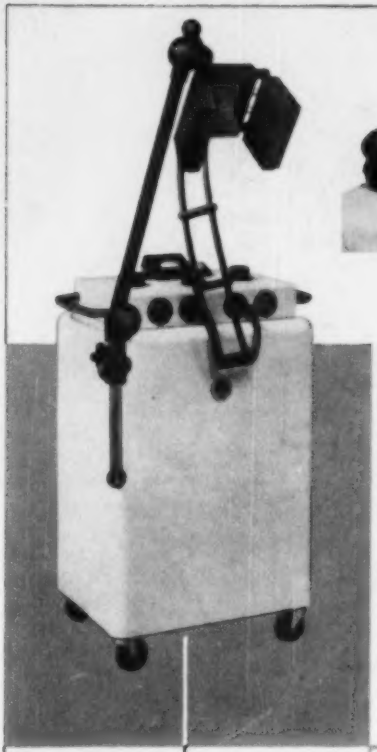

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